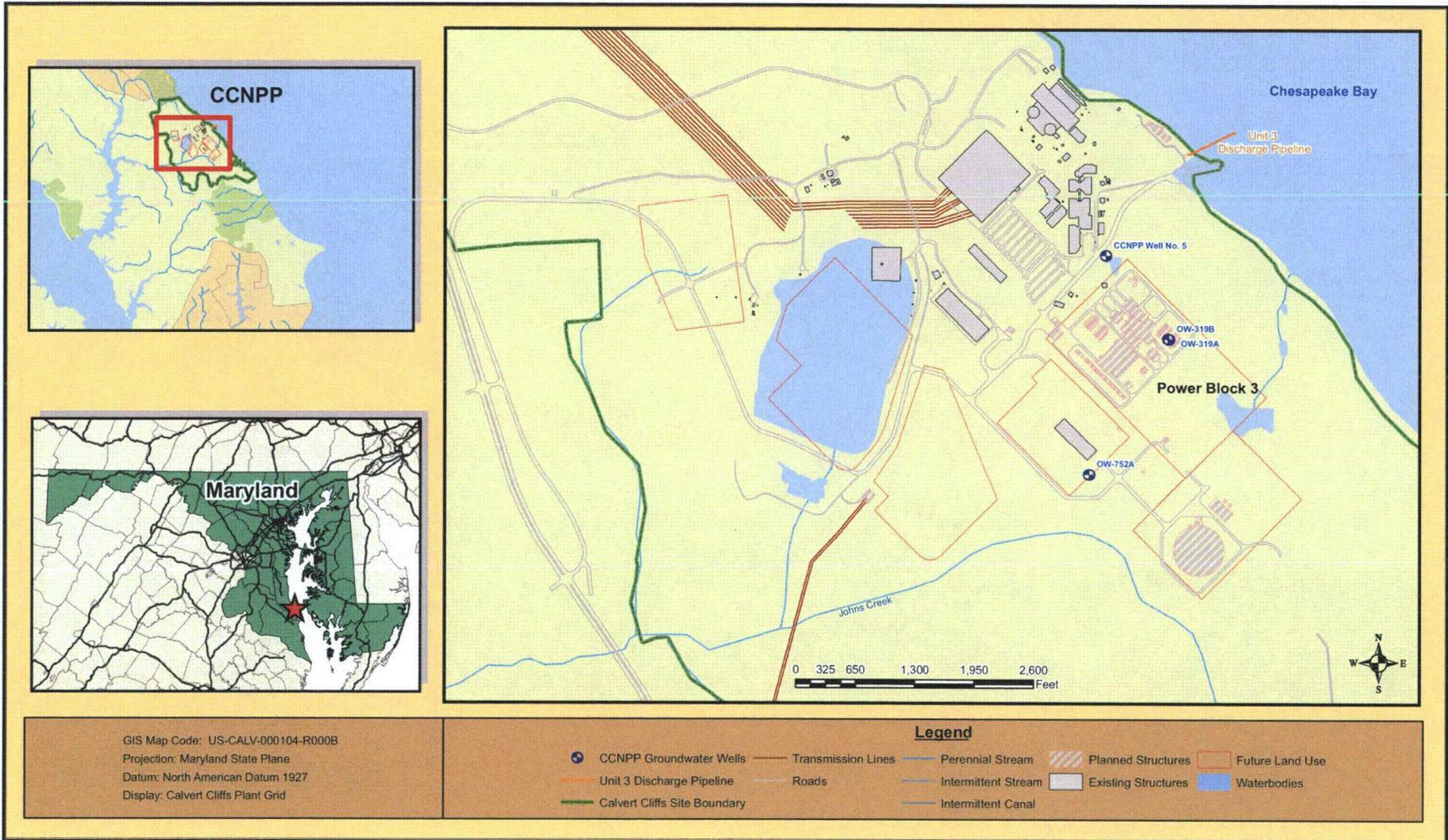
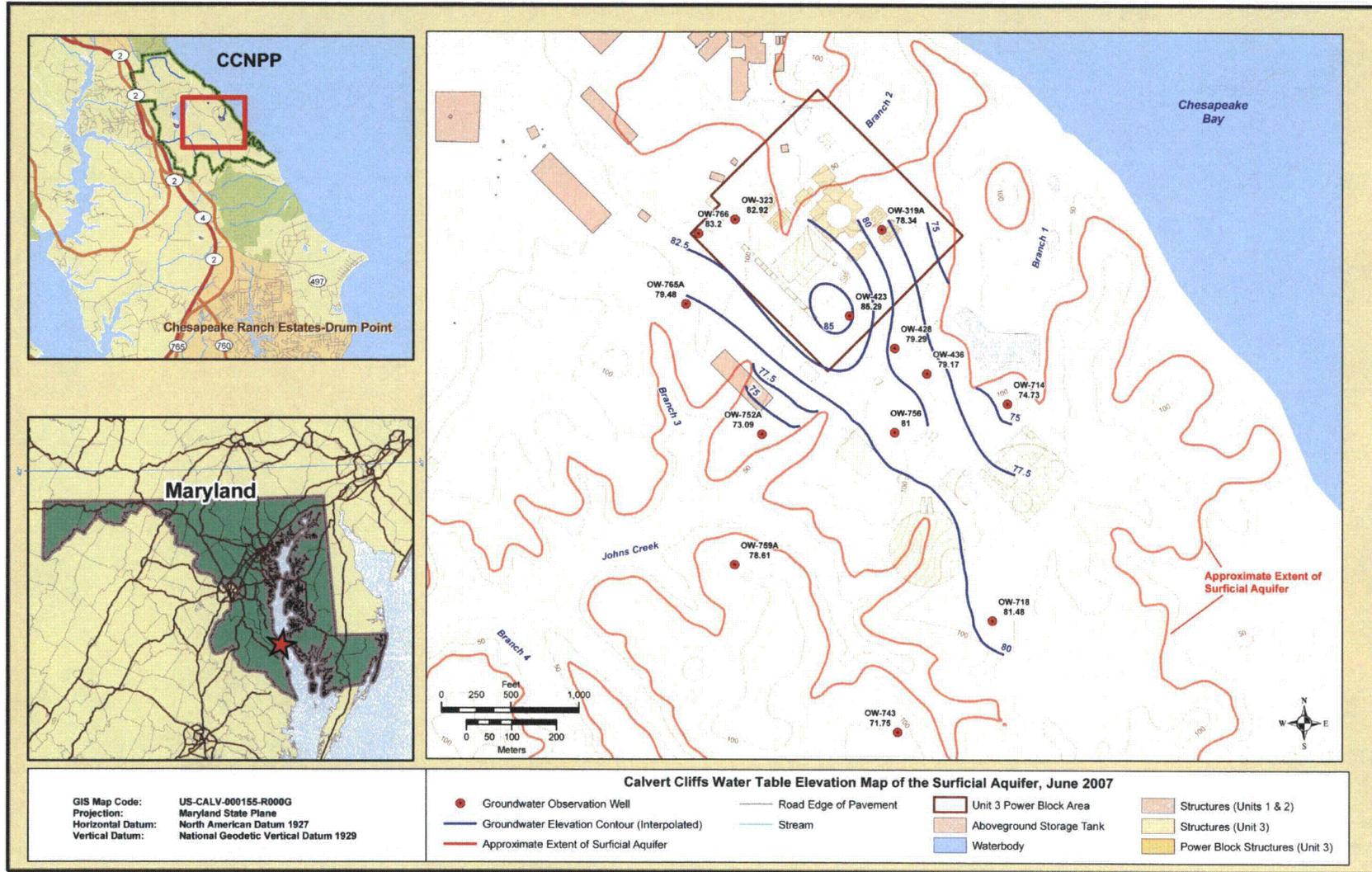


Figure 2.3-85— Groundwater Sampling Locations at CCNPP, May 2007



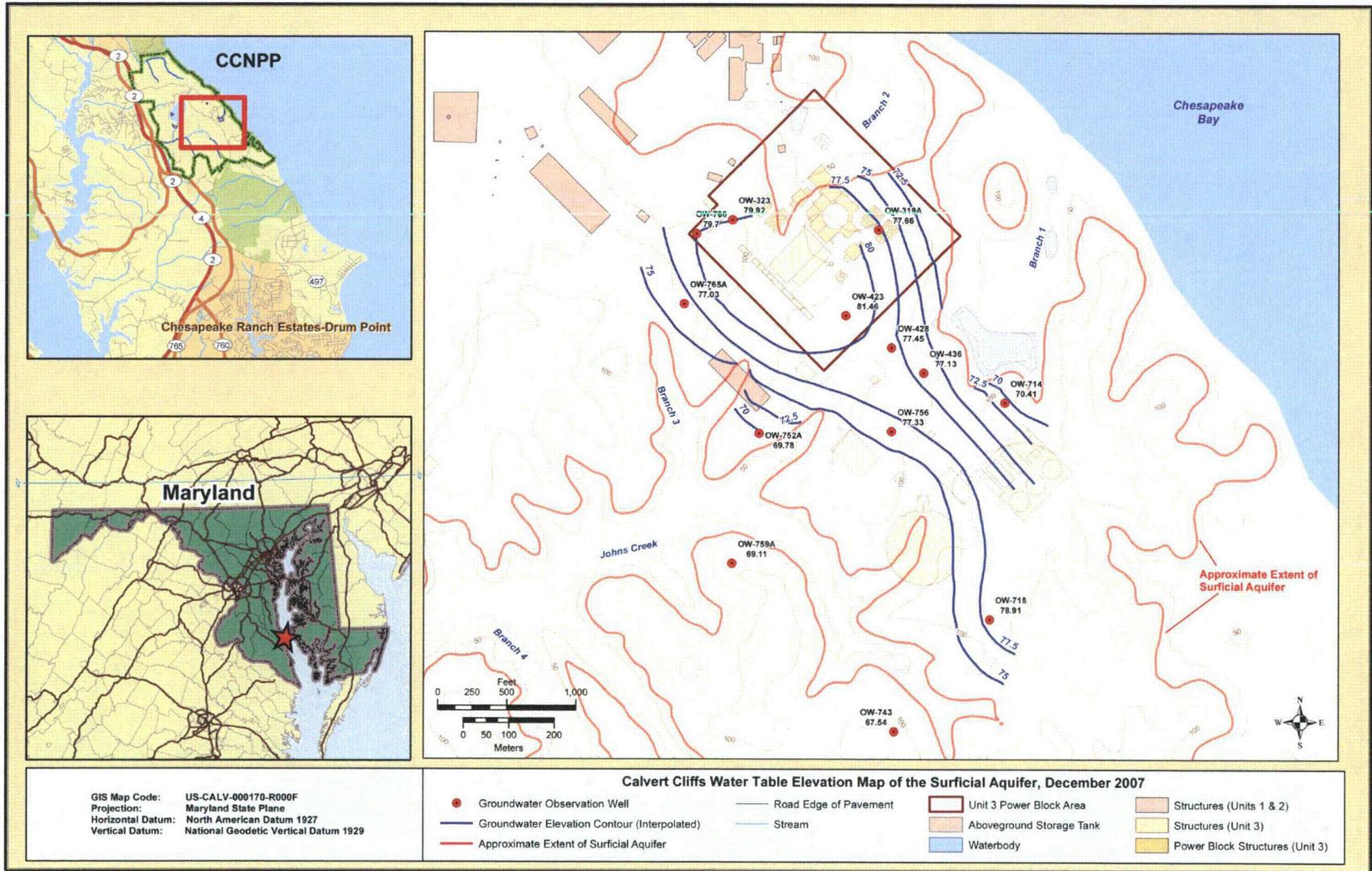
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-86— {Water Table Elevation Map for the Surficial Aquifer, June 2007}



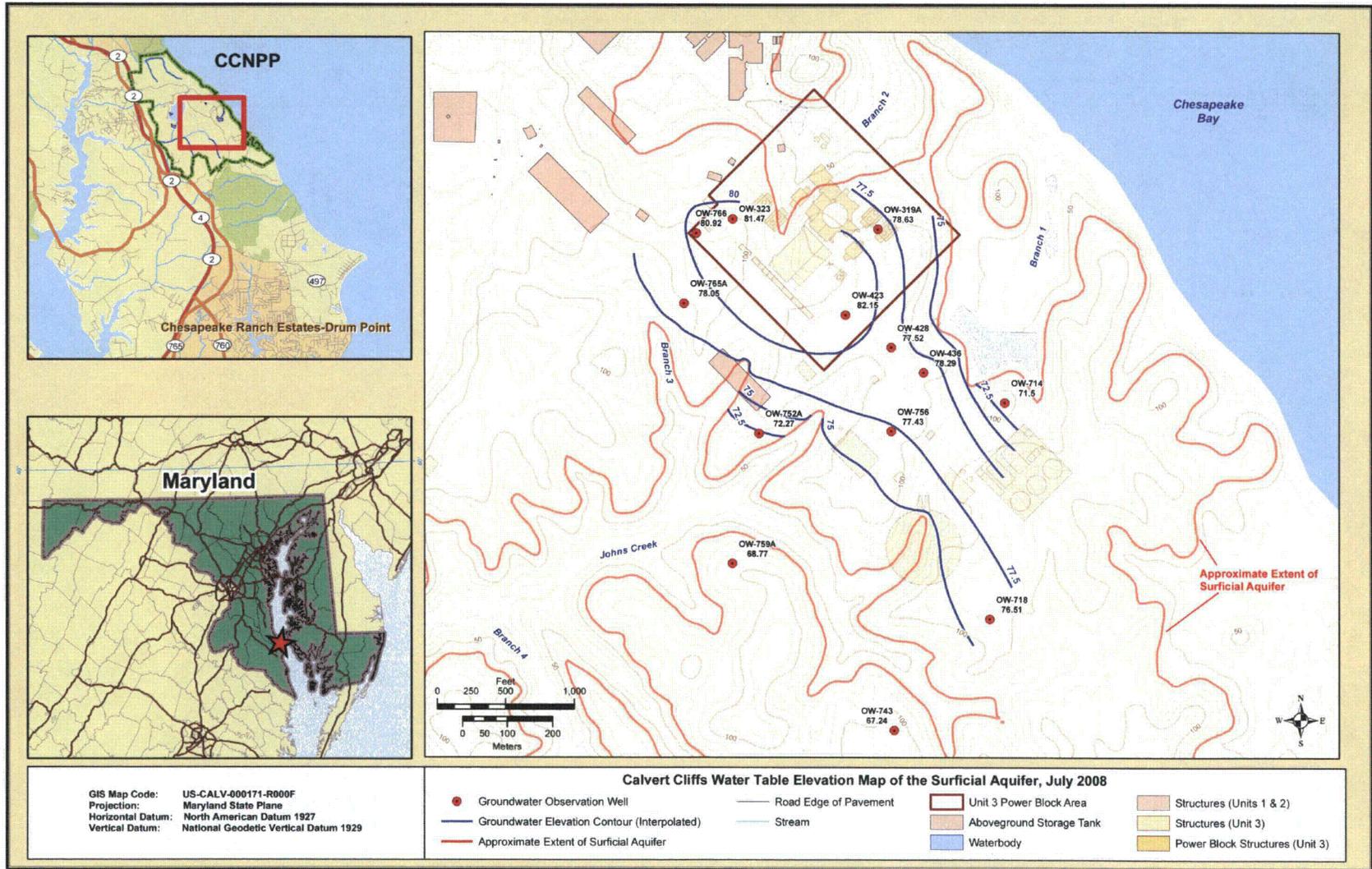
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-87— {Water Table Elevation Map for the Surficial Aquifer, December 2007}



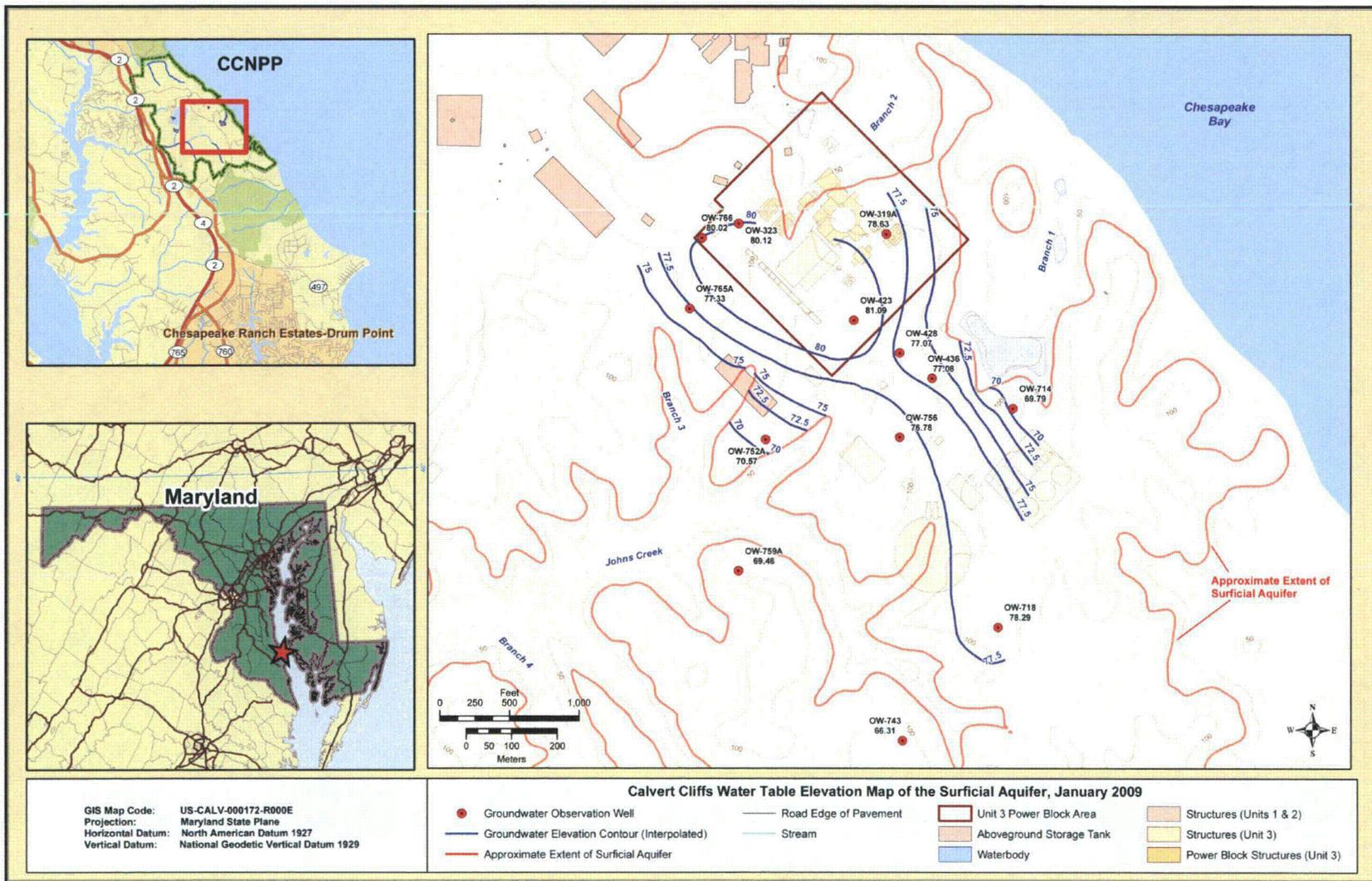
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-88— {Water Table Elevation Map for the Surficial Aquifer, July 2008}



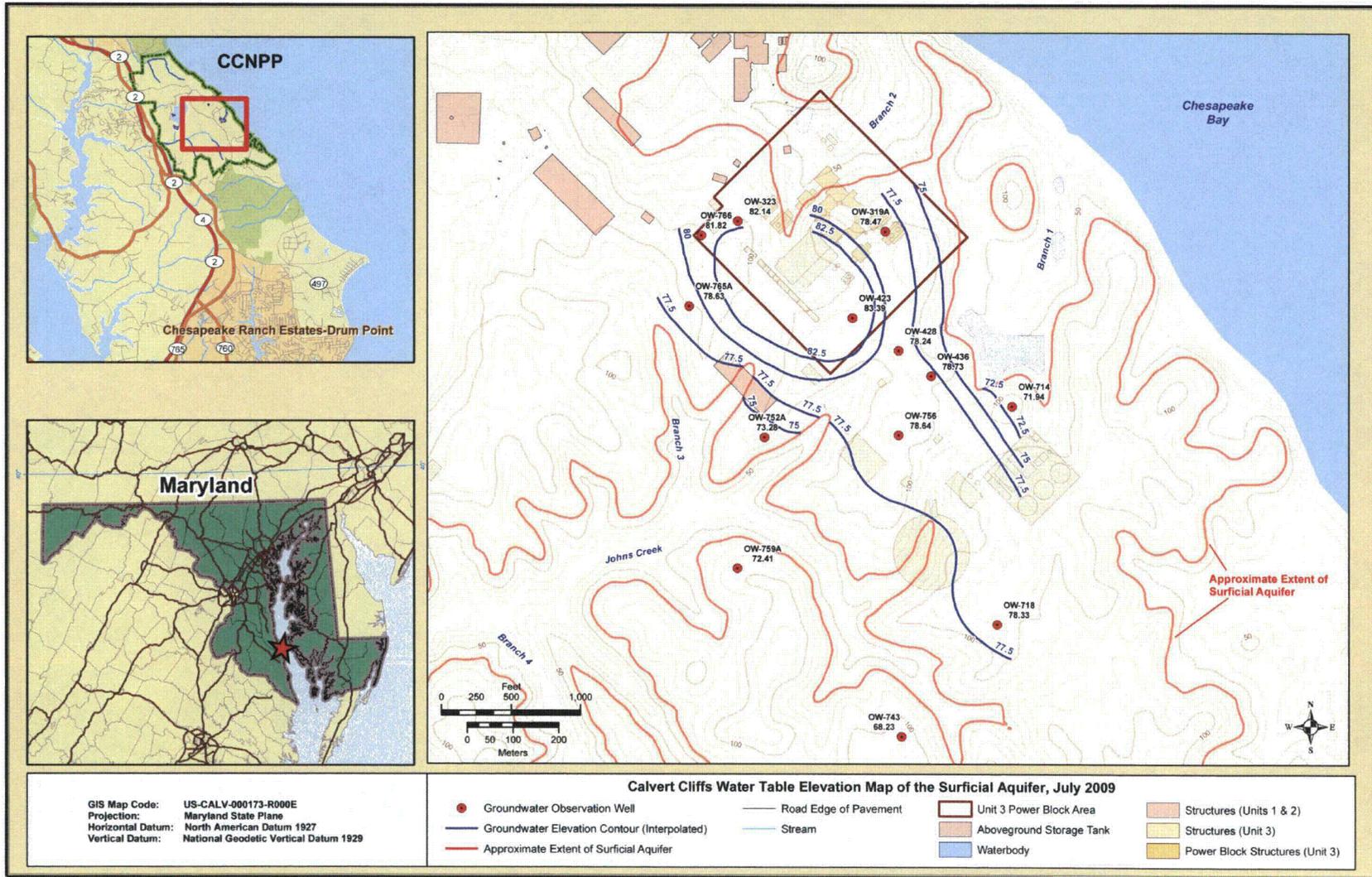
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-89— {Water Table Elevation Map for the Surficial Aquifer, January 2009}



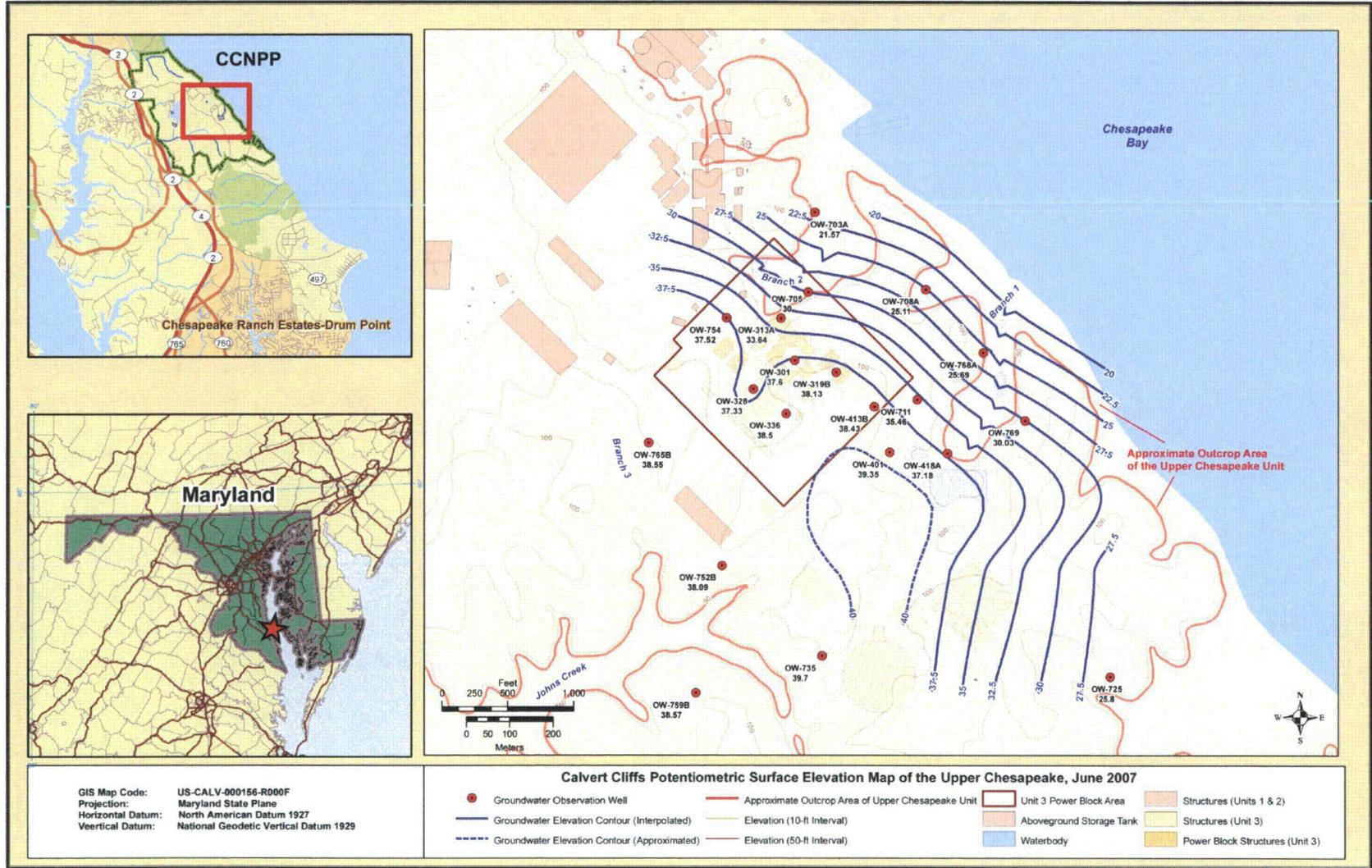
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-90— [Water Table Elevation Map for the Surficial Aquifer, July 2009]



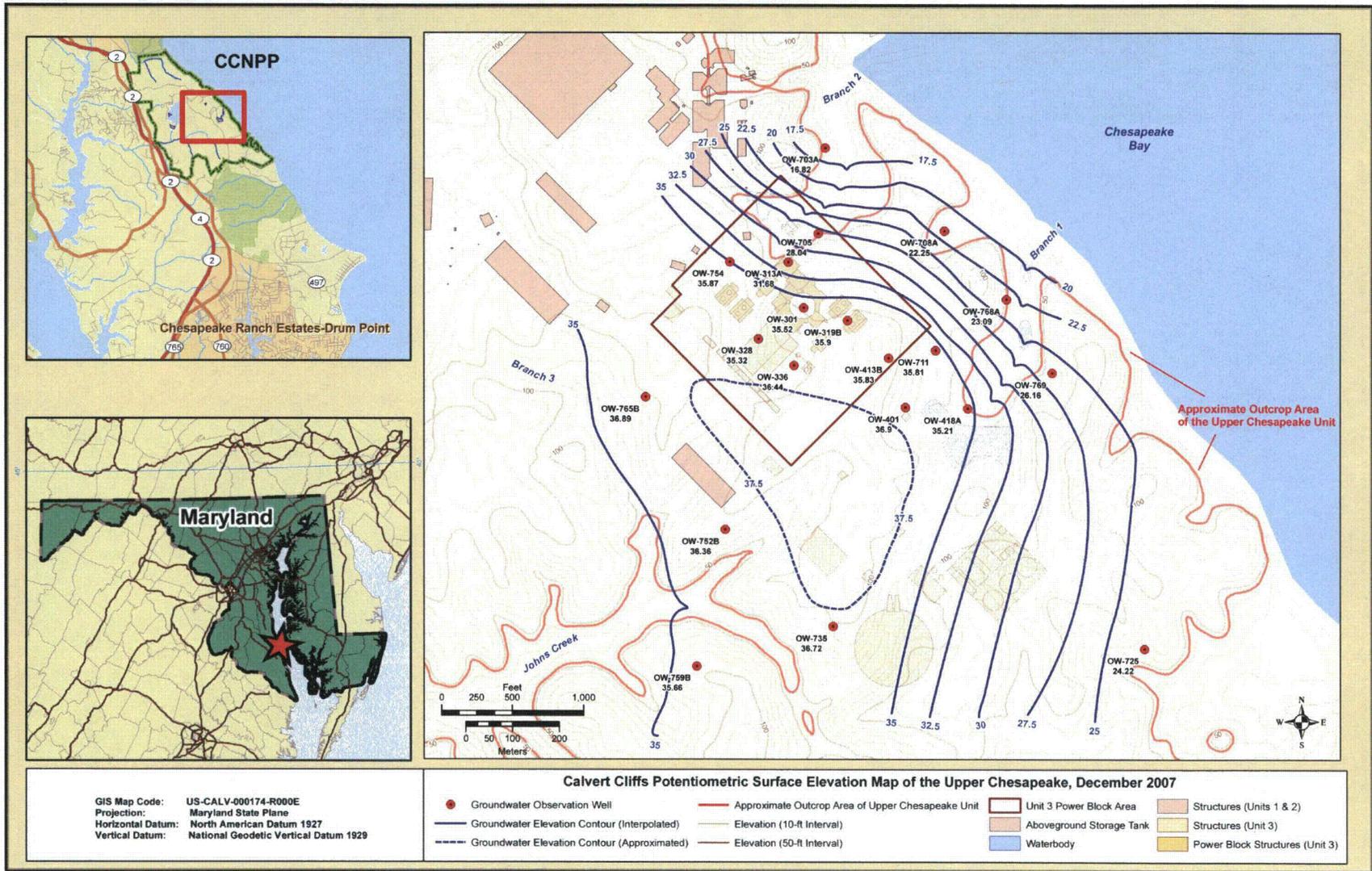
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-91— {Potentiometric Surface Elevation Map for the Upper Chesapeake Unit, June 2007}



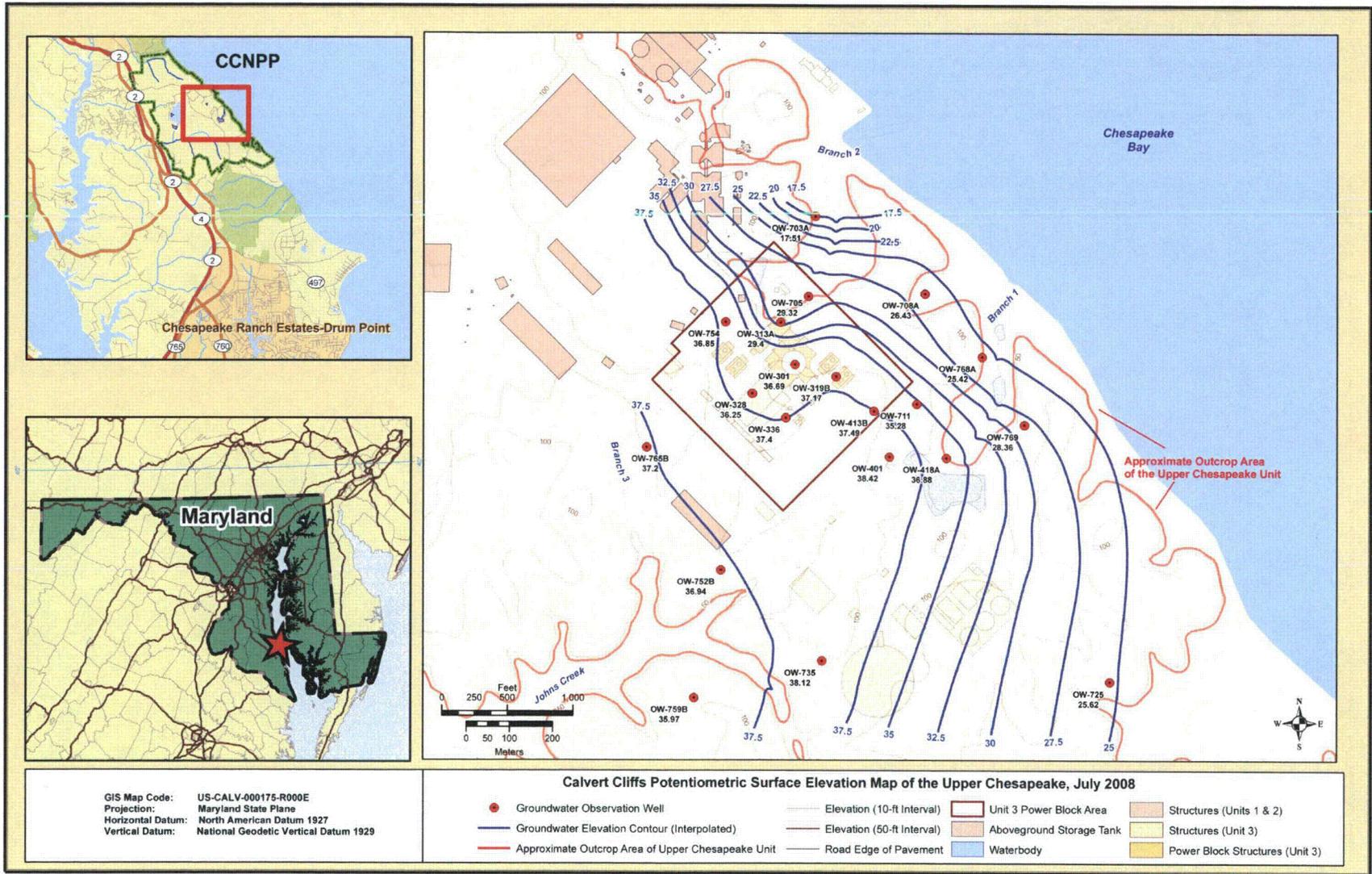
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-92— {Potentiometric Surface Elevation Map for the Upper Chesapeake Unit, December 2007}



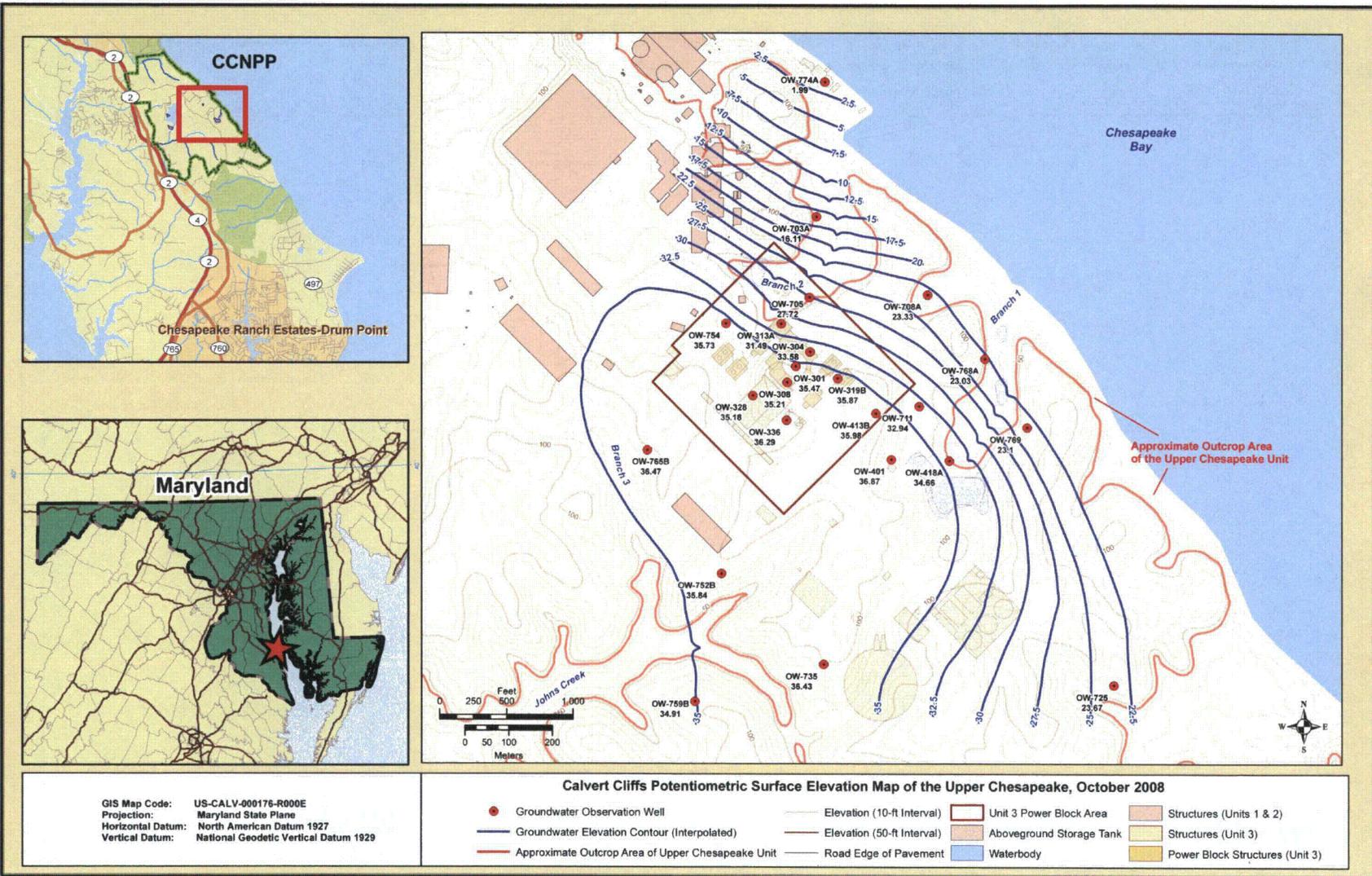
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-93— {Potentiometric Surface Elevation Map for the Upper Chesapeake Unit, July 2008}



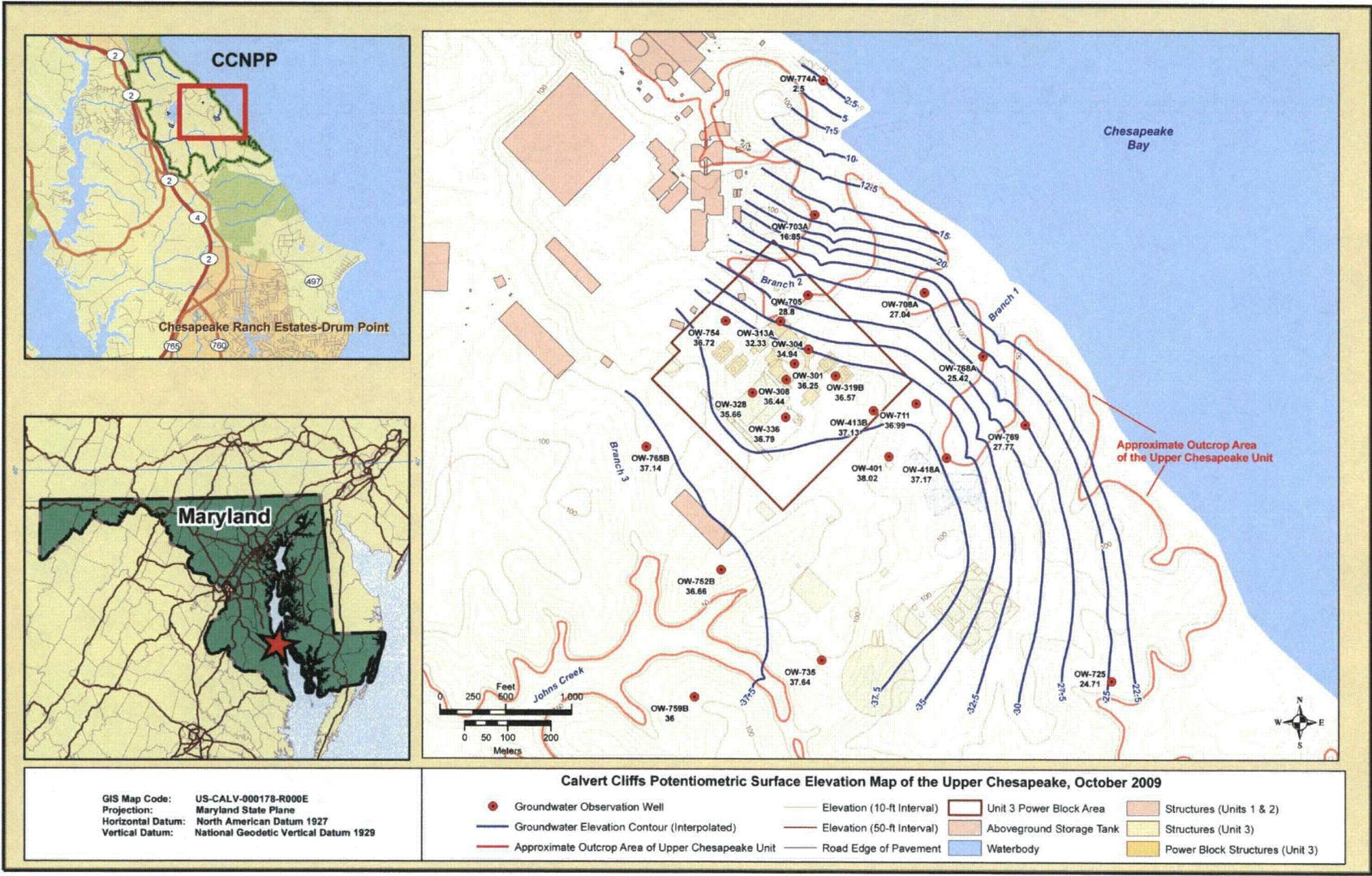
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-94— [Potentiometric Surface Elevation Map for the Upper Chesapeake Unit, October 2008]



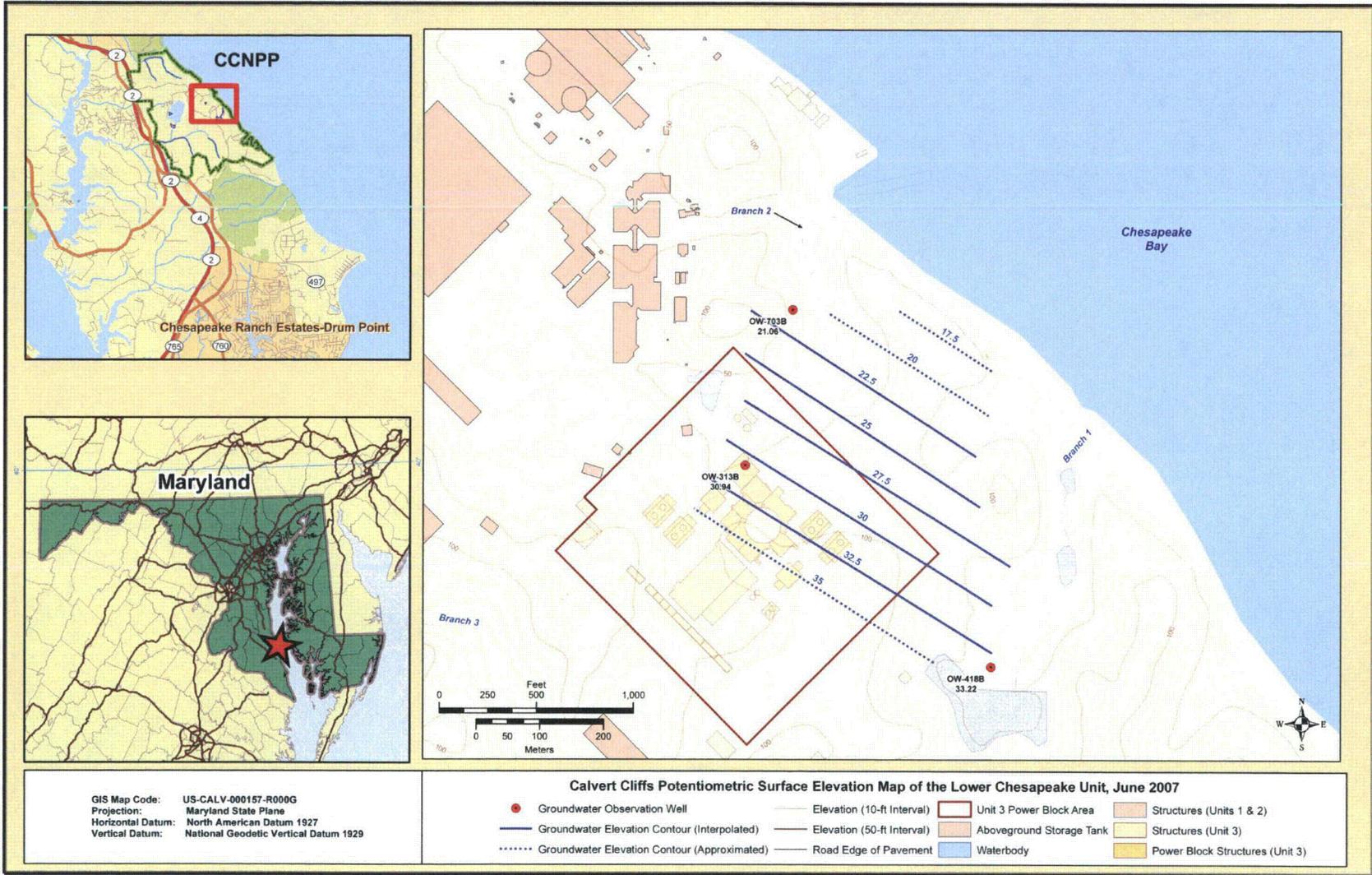
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-96— {Potentiometric Surface Elevation Map for the Upper Chesapeake Unit, October 2009}



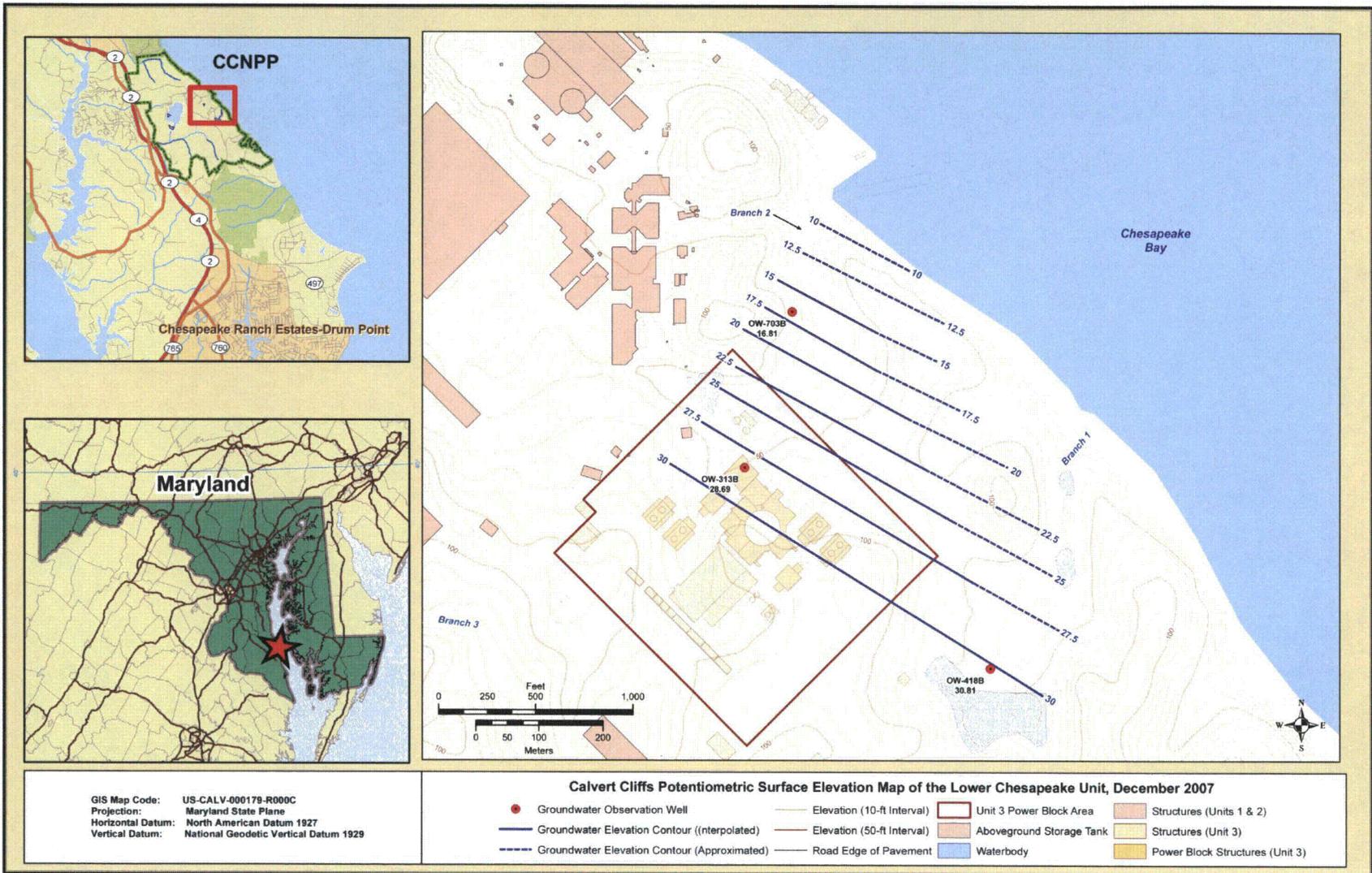
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-97— {Potentiometric Surface Elevation Map for the Lower Chesapeake Unit, June 2007}



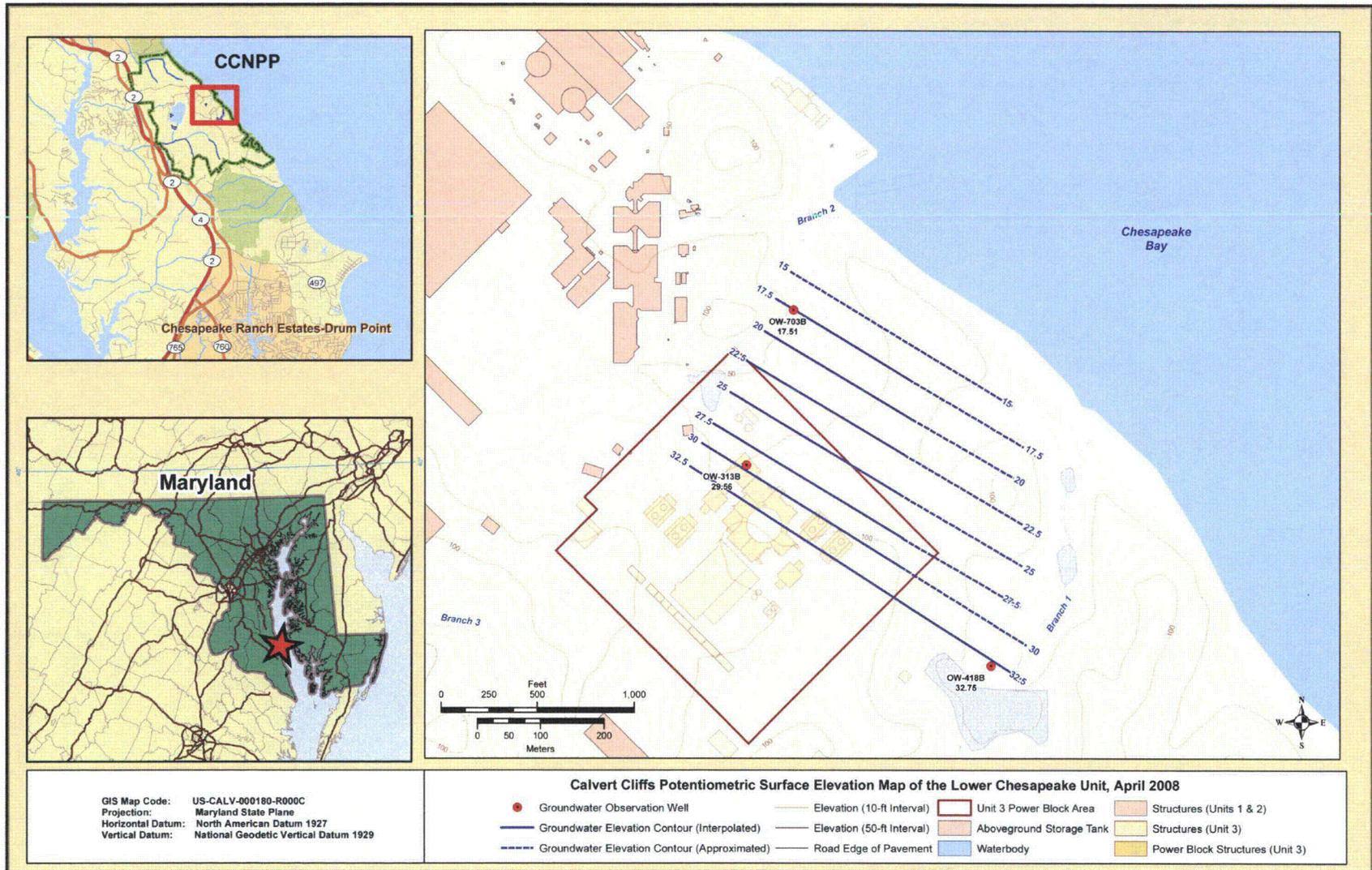
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-98— {Potentiometric Surface Elevation Map for the Lower Chesapeake Unit, December 2007}



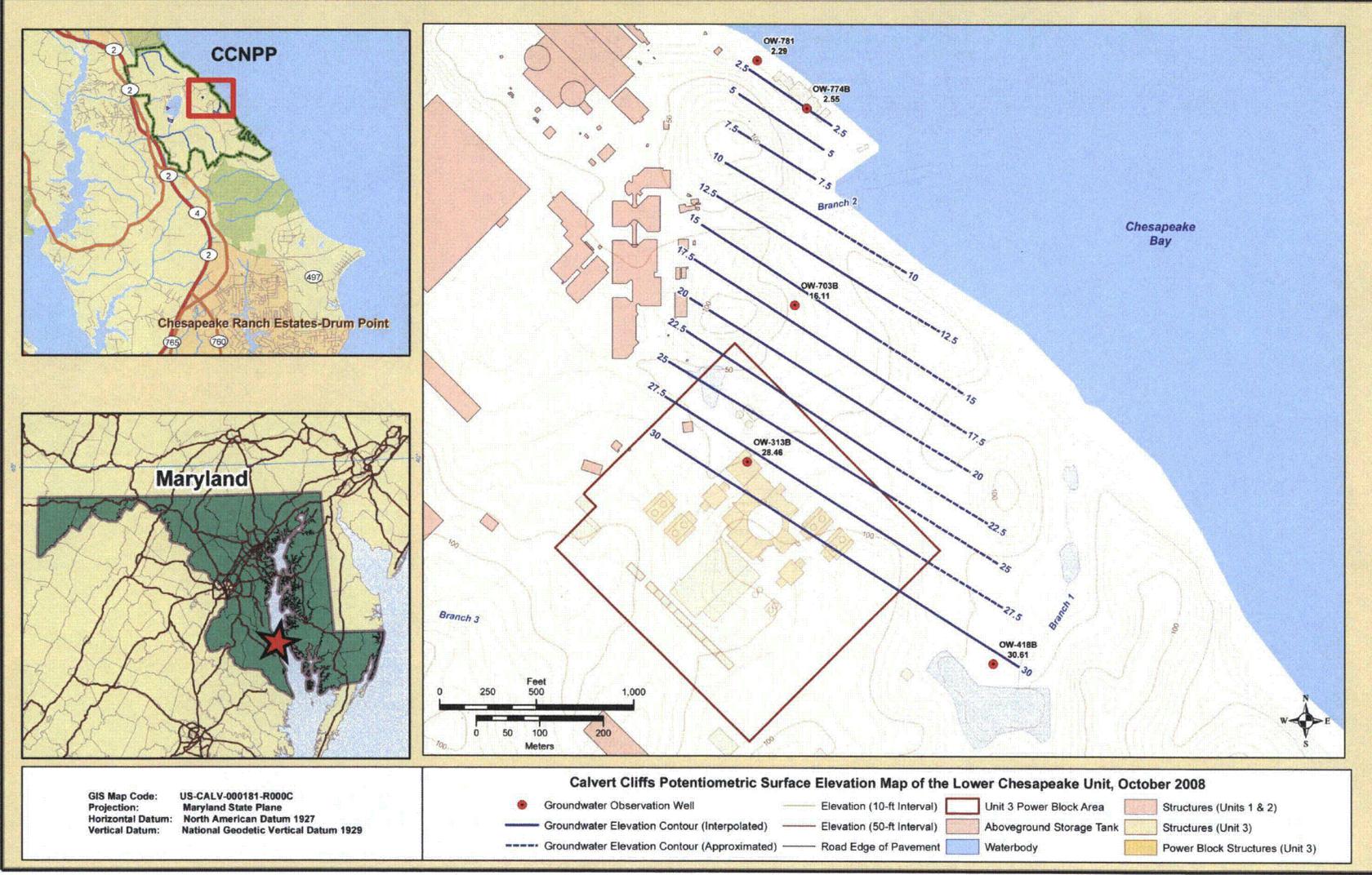
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-99— {Potentiometric Surface Elevation Map for the Lower Chesapeake Unit, April 2008}



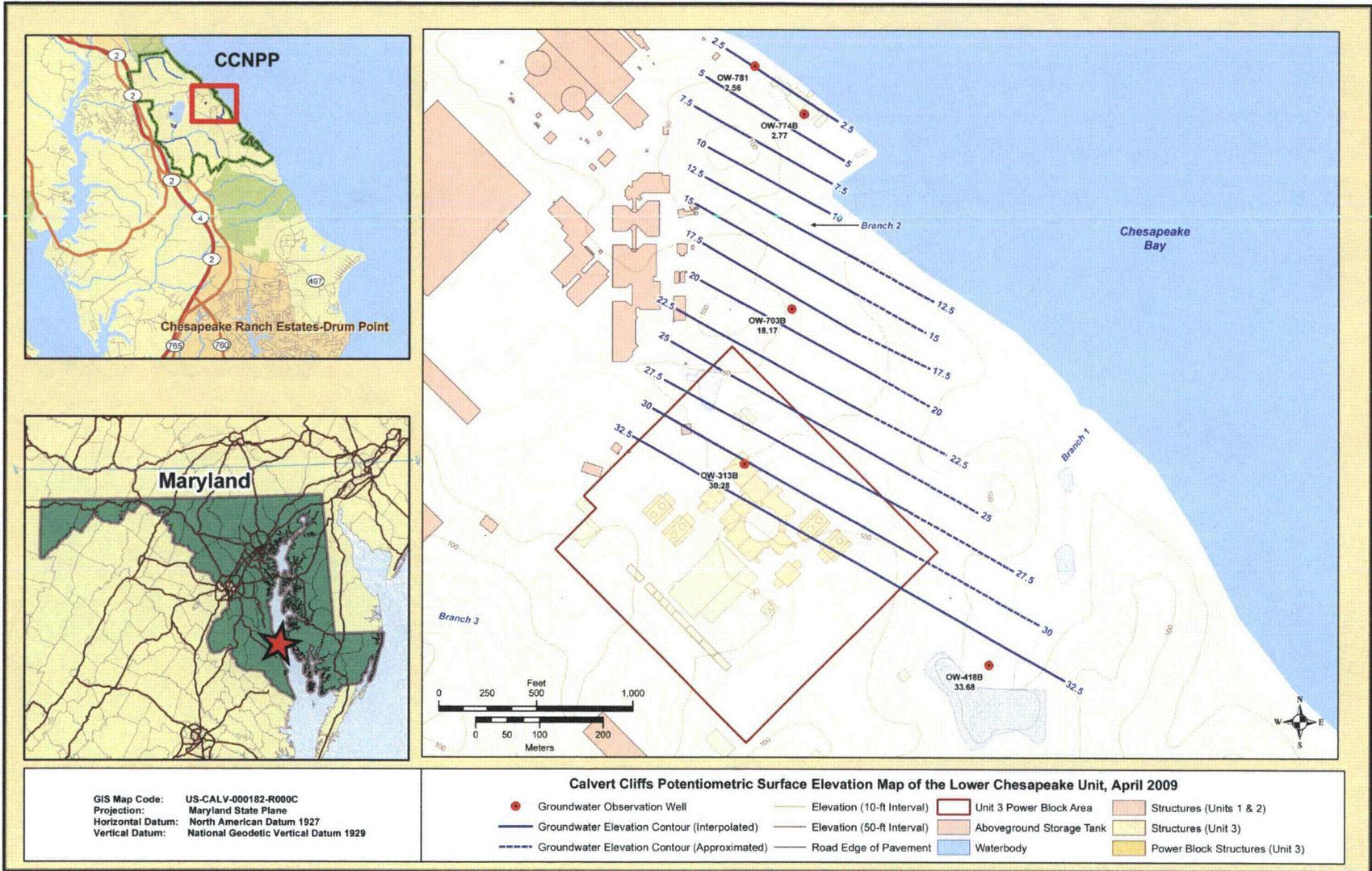
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-100— {Potentiometric Surface Elevation Map for the Lower Chesapeake Unit, October 2008}



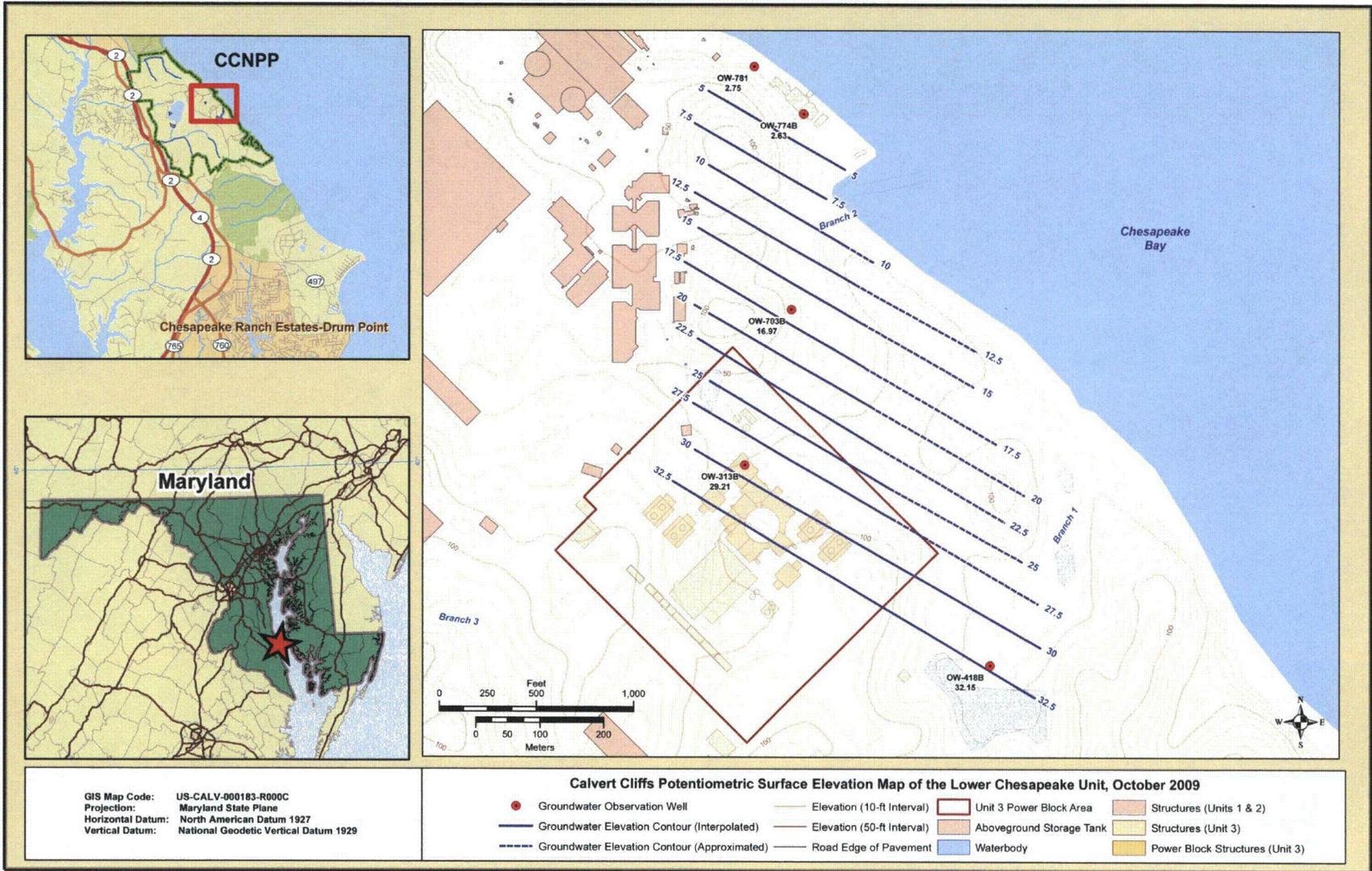
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-101 — {Potentiometric Surface Elevation Map for the Lower Chesapeake Unit, April 2009}



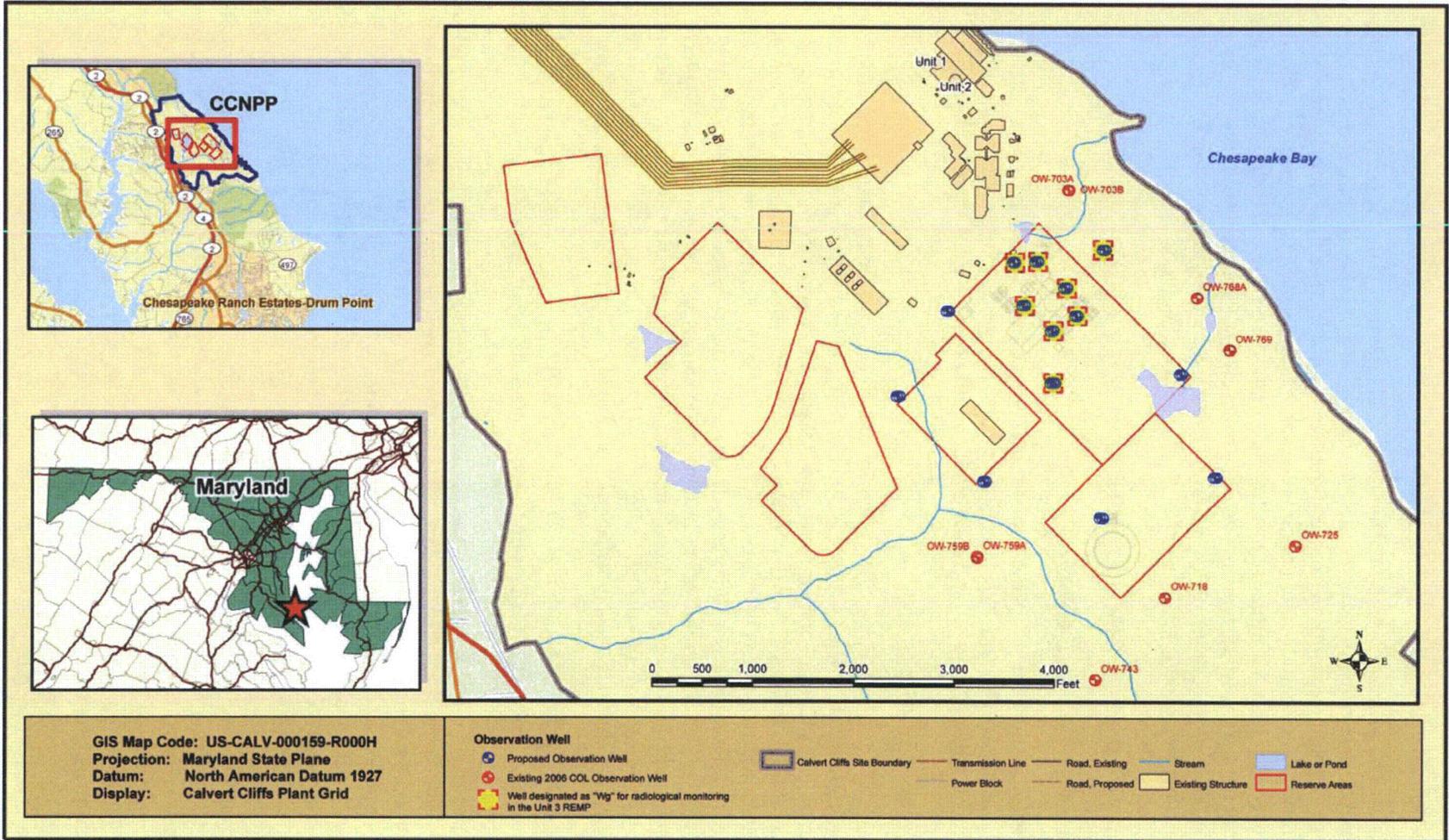
See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-102— {Potentiometric Surface Elevation Map for the Lower Chesapeake Unit, October 2009}



See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

Figure 2.3-103— {Proposed Post Construction Observation Well Locations}



See Figure 2.1-1 and Figure 3.1-2 for Site and Powerblock layout

2.4 ECOLOGY

2.4.1 Terrestrial Ecology

The terrestrial ecology of the Calvert Cliffs Nuclear Power Plant (CCNPP) site, including the CCNPP Unit 3 construction area, was characterized in a series of field studies conducted over a one year period extending from May 2006 to April 2007. The field studies include a flora survey, a faunal survey, rare tiger beetles, rare plants, and wetlands delineation. The subsections below summarize relevant information from each of these studies and provide other data on existing terrestrial ecology in accordance with the guidance in NUREG-1555 (NRC, 1999a). In addition, a Forest Stand Delineation Report and a Forest Conservation Plan were finalized in July, 2008.

A topographic map of the site is provided as Figure 2.3-4~~Figure 2.3-2.~~

2.4.1.1 Terrestrial Habitats

The flora survey covers each plant community type (terrestrial habitat type) observed on the CCNPP site in 2006 and 2007. A map of the plant community types is presented in Figure 2.4-1~~Figure 2.4-1,~~ and each plant community type is briefly discussed below.

Lawns and Developed Areas

(Gray in Figure 2.4-1~~Figure 2.4-1~~) - Lawns and developed areas occur over a broad area in the east-central part of the CCNPP site (surrounding the two existing CCNPP reactor units) and in Camp Conoy. Camp Conoy includes several athletic fields and other lawn areas surrounding recreational facilities. Other than scattered trees and shrubs planted as ornamental landscaping, the lawns on the CCNPP site consist only of a groundcover stratum. Most of the lawns consist of cool season grasses (grasses that typically seed during spring and fall) such as tall fescue (*Festuca arundinacea*), bluegrass (*Poa pratensis*), large crabgrass (*Digitaria sanguinalis*), and Bermuda grass (*Cynodon dactylon*). Common broadleaf weeds typical of lawns are also present, such as white clover (*Trifolium repens*), broadleaf plantain (*Plantago major*), dandelion (*Taraxicum officinale*), and yellow hawkweed (*Hieracium pretense*).

Old Field (Yellow and Light Brown in Figure 2.4-1~~Figure 2.4-1~~) - The largest area of old field vegetation in the CCNPP site is on the dredge spoils deposited since the early 1970s on lands extending west from CCNPP Units 1 and 2 (Yellow in Figure 2.4-1~~Figure 2.4-1~~). The dredge spoils are covered by a dense stand of phragmites (*Phragmites australis*). Phragmites is a perennial grass that can grow to more than 10 ft (3 m) tall and typically infests brackish and fresh tidal and non-tidal marshes. Its presence on the dredge spoil piles is likely a result of propagules (seeds and rhizome fragments) carried with dredge spoils excavated from the shoreline. Other plants typical of old fields, such as common blackberry (*Rubus allegheniensis*) and tall fescue (*Festuca arundinacea*), are also present on the dredge spoils but are not as prevalent as phragmites.

Old field vegetation is also located in some small fields in the northwestern part of the CCNPP Unit 3 construction area, in scattered forest clearings around the perimeter of the dredge spoils, and in other developed areas on the CCNPP site, as well as along roadsides (Light Brown in Figure 2.4-1~~Figure 2.4-1~~). Many such areas were disturbed during construction of CCNPP Units 1 and 2 and various support facilities, such as the Independent Spent Fuel Storage Installation (ISFSI). Vegetation in these areas is dominated by tall fescue, sericea lespedeza (*Lespedeza cuneata*), common blackberry, Canada goldenrod (*Solidago canadensis*), and asters (*Aster sp.*).

Mixed Deciduous Forest

(Light Green in Figure 2.4-1 Figure 2.4-1) - Most forested uplands on the CCNPP site, as well as the southern and western parts of the CCNPP Unit 3 construction area, support deciduous forest dominated by tulip poplar (*Liriodendron tulifera*); chestnut oak (*Quercus prinus*); white oak (*Quercus alba*); red oaks such as black oak (*Quercus velutina*), southern red oak (*Quercus falcata*), and scarlet oak (*Quercus coccinia*); American beech (*Fagus grandifolia*); and Virginia pine (*Pinus virginiana*). Other canopy trees include hickories such as pignut hickory (*Carya glabra*) and bitternut hickory (*Carya cordiformis*), red maple (*Acer rubrum*), sweet gum (*Liquidambar styraciflua*), swamp chestnut oak (*Quercus michauxii*), and black gum (*Nyssa sylvatica*). The forest understory consists of dense patches of mountain laurel (*Kalmia latifolia*), pawpaw (*Asimina trilobata*), and American holly (*Ilex opaca*), with scattered but frequent saplings of canopy species. Ground cover is sparse except where recently fallen trees have left gaps in the tree canopy. Scattered patches of the following species are present in the groundcover: partridgeberry (*Mitchella repens*), Christmas fern (*Polystichum acrostichoides*), common violet (*Viola papilionacea*), and large whorled pogonia (*Isotria verticillata*).

Mixed Deciduous Regeneration Forest

(Dark Green in Figure 2.4-1 Figure 2.4-1) - Several areas of relatively level highlands that formerly supported mixed deciduous forest have been subjected to timber harvest activities within the past 20 years. These areas presently support dense thickets of deciduous trees and Virginia pines. The deciduous trees consist of tulip poplar, oaks, sweet gum, and red maple. Virginia pine is generally more frequent in the regenerating forest than in adjoining areas of mature mixed deciduous forest. The regenerating forest lacks a distinct understory but does contain scattered mountain laurel and American holly. Little groundcover is present other than along fire roads or in other small openings.

Well-Drained Bottomland Deciduous Forest

(Light Red in Figure 2.4-1 Figure 2.4-1) - Areas of well-drained soils in lowlands adjoining Johns Creek, Goldstein Branch, their headwaters, and other streams on the CCNPP site support bottomland deciduous forest dominated by tulip poplar, American beech, sweet gum, black gum, and red maple. This vegetation represents an ecotone (transition) between the mixed deciduous forest on the adjoining upland slopes and the bottomland hardwood forest in wetter areas closer to the stream channel. The understory is generally sparse, although some mountain laurel and American holly are present. While groundcover is generally sparse, dense patches of New York fern (*Thelypteris noveboracensis*) are frequent. (Note: Bottomland deciduous forest outside of the area addressed by the wetland delineation is mapped as a single unit (purple) rather than separated into well-drained and poorly drained components.)

Poorly Drained Bottomland Deciduous Forest

(Dark Red in Figure 2.4-1 Figure 2.4-1) - Areas of poorly-drained, seasonally saturated soils in lowlands adjoining Johns Creek, Goldstein Branch, their headwaters, and other streams on the CCNPP site support bottomland hardwood forest dominated by red maple, sweet gum, and black gum. The shrub layer is generally sparse. The groundcover is generally dense, dominated by ferns such as New York fern, sensitive fern (*Onoclea sensibilis*), and royal fern (*Osmunda regalis*); sedges and rushes such as tussock sedge (*Carex stricta*), eastern bur-reed (*Sparangium americanum*), and soft rush (*Juncus effusus*); and forbs such as lizard tail (*Saururus cernuus*) and skunk cabbage (*Symplocarpus foetidus*). (Note: Bottomland deciduous forest outside of the area addressed by the wetland delineation is mapped as a single unit (purple) rather than separated into well-drained and poorly drained components.)

Herbaceous Marsh Vegetation

(Light Blue in Figure 2.4-1) - Herbaceous marsh vegetation occurs throughout much of the broad bottomland areas adjoining Johns Creek in the western part of the CCNPP site as well as in localized gaps in the forest cover in the narrower bottomlands adjoining the headwaters of Johns Creek, Goldstein Branch, and other streams. It is dominated in many places by phragmites. Other areas are dominated by sedges, rushes, and bulrushes; lizard tail, which forms localized dense patches; and various other wetland forbs such as dotted smartweed (*Polygonum punctatum*), Pennsylvania smartweed (*Polygonum pennsylvanicum*), jewelweed (*Impatiens capensis*), and halberd-leaved tearthumb (*Polygonum arifolium*). These areas include a marshy fringe surrounding the shore of Lake Conoy, two smaller impoundments on the stream carrying the outflow from Lake Conoy to the Chesapeake Bay, a constructed wetland in the northwestern part of the CCNPP site, and a marshy fringe surrounding a stormwater detention pond west of a dock on the Chesapeake Bay.

Successional Hardwood Forest

(Dark Brown in Figure 2.4-1) - Small patches of forest on recently disturbed lands in the central part of the CCNPP site support forest cover dominated by fast-growing tree species that establish in sunny areas such as old fields. Dominant tree species include black locust (*Robinia pseudoacacia*), black cherry (*Prunus serotina*), and eastern redcedar (*Juniperus virginiana*). The understory generally consists of the same shrub, vine, and herbaceous species described for old field vegetation. Most of the canopy trees are less than 10 in (25.4 cm) diameter at breast height (DBH). The canopy trees cast only weak shade and allow dense undergrowth by old field species.

As noted in the Forest Stand Delineation Report ("FSD"), of these plant communities, only the Mixed Deciduous Forest, Mixed Deciduous Regeneration Forest, Bottomland Deciduous Forest (Well-Drained and Poorly Drained), and Successional Hardwood Forest meet the definition of "Forest" established under the Maryland Forest Conservation Act. These forest areas were further characterized, mapped and quantified. Table 1 of the FSD lists each stand studied in the FSD, and describes the type of tree cover found in the stand and the size of the stand. The FSD also identifies priority areas for forest retention, including Sycamore-Sweetgum-American Elm, and Chestnut Oak forest stands. The Forest Conservation Plan ("FCP") draws on the baseline data developed in the FSD, identifies the impact of the proposed project on forest stands, and outlines the mitigation requirements under the Maryland Forest Conservation Act.

Most lands elsewhere on the CCNPP site support the habitats described above. Where the Chesapeake Bay shoreline has not been developed with the existing reactor units and barge dock, it consists of a narrow sandy beach at the base of steep, sandy cliffs. The beach is generally less than 20 ft (6 m) wide during normal low tides. There are no tidal marshes on the CCNPP site. However, small tidal marshes are present in the Flag Ponds Natural Area north of the CCNPP site and on the shoreline of tidal reaches of St. Leonard's Creek and its tributaries. Some forested areas close to the Chesapeake Bay or other tidal waters support forest dominated by loblolly pine (*Pinus taeda*), and some inland areas support forest dominated by Virginia pine. The latter consist primarily of recently abandoned farmlands or other lands recently disturbed and left to naturally regenerate.

2.4.1.2 Important Terrestrial Species and habitats

NUREG-1555 (NRC, 1999a) defines important species as: 1) species listed or proposed for listing as threatened, endangered, candidate, or of concern in 50 CFR 17.11 and 50 CFR 17.12 (CFR, 2007a), by the U.S. Fish and Wildlife Service, or the state in which the project is located; 2)

commercially or recreationally valuable species; 3) species essential to the maintenance and survival of rare or commercially or recreationally valuable species; 4) species critical to the structure and function of local terrestrial ecosystems; or 5) species that could serve as biological indicators of effects on local terrestrial ecosystems. Floral and faunal surveys that document observations made on the CCNPP site between May 2006 through April 2007 are summarized herein.

Three plant communities occurring on the CCNPP site are identified as important habitats: herbaceous marsh vegetation, poorly drained bottomland deciduous forest, and well-drained bottomland deciduous forest and are shown in Figure 2.4-1. Herbaceous marsh vegetation and poorly-drained bottomland deciduous forest meet the definition of wetlands established in 33 CFR 328.3 for the Federal Clean Water Act and COMAR 26.23.01.01(B)(62) for the Maryland Nontidal Wetland Protection Act. The exact boundaries of wetlands in the CCNPP site area were delineated between May 2006 and September 2006 using routine onsite procedures in the Corps of Engineers Wetlands Delineation Manual. The wetland boundaries were marked in the field using sequentially numbered flags. The coordinates for each flag were determined in the field as part of a land survey. Well-drained bottomland deciduous forest habitat in the CCNPP site area occurs in stream valley lands that are too well-drained to meet the regulatory definition of a wetland but still occur in floodplains.

Table 2.4-1 lists each species and habitat identified as important for the CCNPP site and surrounding area according to the criteria in NUREG-1555 (NRC, 1999a). Each species deemed an important species is discussed in more detail below.

2.4.1.2.1 Mammals

The only mammal species meeting the NUREG-1555 criteria for important is the white-tail deer (*Odocoileus virginianus*). White-tail deer is a recreationally valuable species that is valued for hunting in most rural counties in Maryland, including Calvert County.

2.4.1.2.1.1 Population Abundance and Distribution

White-tail deer were observed in all habitats on the CCNPP site during the 2006 fauna survey. Although other mammal species were observed, none were as frequent or widespread over all habitats as white-tail deer.

2.4.1.2.1.1.1 Habitat Requirements

White-tail deer are large herbivorous (plant-eating) mammals favoring fragmented brushy woods interspersed with abandoned fields and thickets.

2.4.1.2.1.1.2 Life History

Rutting season extends from late September through February, with a peak in November. Gestation takes between 200 and 210 days. Does reproduce only once a year, in May or June, and usually produce one fawn the first year, but may produce twins or even triplets in the following years, if food is plentiful. Fawns remain in the den for the first couple of weeks, and are weaned between the ages of four and eight months, but begin to graze before this time. They lose their white spots in the fall. Males reach puberty at around 18 months, and begin growing their first rack in the spring following their birth. Deer are more social in winter and congregate in herds, and tend to disperse and become more solitary in spring.

2.4.1.2.1.1.3 Population Dynamics

Natural predators in Maryland were historically limited to large carnivores such as wolves and mountain lions. Elimination of these predators coupled with a recent increase in forest

fragmentation has resulted in very high white-tail deer populations in Maryland and Virginia. Today, white-tail deer are a pest species that damage forest and landscape vegetation and cause numerous automobile collisions.

2.4.1.2.2 Birds

Two bird species have been identified as important according to NUREG-1555 (NRC, 1999a). They are the bald eagle (*Haliaeetus leucocephalus*) and the scarlet tanager (*Piranga olivacea*).

2.4.1.2.2.1 Bald Eagle

2.4.1.2.2.1.1 Population Abundance and Distribution

The bald eagle, a federal protected species, and a state threatened species, is the only bird species observed during the 2006 to 2007 field surveys or anecdotally reported by site personnel to occur on the CCNPP site that is designated threatened or endangered on the federal or state level, or candidates for such listing. As of the end of 2006, three bald eagle nests were known to exist on the CCNPP Site as shown in Figure 2.4-2. All were outside of the Project Area. Chicks were reported at two of the three nest locations during site reconnaissance conducted in April 2008; i.e., a nest located along Johns Creek near the Lake Davies Dredge Disposal Area and a nest located at Rocky Point to the east of Camp Conoy Road. The third eagle nest, which was located to the northwest of CCNPP Units 1 and 2, blew down prior to 2007. In April 2007, a new active bald eagle nest was observed in a Virginia pine tree close to Camp Conoy Road, near the southwestern corner of a baseball field. Parent bald eagles were observed circling the nest, suggesting that it was active and contained eggs or recently hatched chicks. However, one of the previously recognized nests (located near the shoreline north of the existing reactors) was reported by site personnel to be inactive in April 2007.

2.4.1.2.2.1.2 Habitat Requirements

Bald eagles prefer to nest in tall trees within sight of lakes, rivers, and other open waters. Bald eagles feed primarily on fish but also feed on waterfowl, seagulls, and small mammals. The optimal bald eagle nesting habitat on the CCNPP site is therefore the forested areas at the top of the cliffs overlooking the Chesapeake Bay. Two of the known nesting locations are in such areas, to the north and south of the project area. The Camp Conoy nest is more than 1,500 feet inland from the Chesapeake Bay but is within sight of the Camp Conoy Fishing Pond. The western nest is situated even farther inland but directly adjoins a large marshy area with pools of open water formed by beaver dams on Johns Creek. The mixture of forest cover and open water present throughout the CCNPP site and surrounding region therefore provides potentially suitable bald eagle habitat.

2.4.1.2.2.1.3 Life History

In Maryland and Virginia, bald eagles typically lay eggs in March or April. They typically hatch about 35 days later, and the young typically begin to fly about 12 weeks after hatching.

2.4.1.2.2.1.4 Population Dynamics

Bald eagle population levels have rebounded in the eastern U.S., including Maryland and Virginia, in recent years.

2.4.1.2.2.2 Scarlet Tanager

The scarlet tanager is included as an important species because it can serve as a biological indicator of effects related to forest fragmentation. Given the relatively high frequency of

observance at the CCNPP site and its forest interior habitat preference, a rarity or absence of observations could indicate a degradation of forest interior habitat.

2.4.1.2.2.1 Population Abundance and Distribution

The scarlet tanager (*Piranga olivacea*) represents the most frequently observed forest interior bird (FIB) species observed in the CCNPP site area during the late spring and summer of 2006 (as expected, this migratory species was not observed during fall 2006 or winter or early spring 2007). All of the FIB species were observed in forested areas in the southern, southwestern, and western part of the project site area.

2.4.1.2.2.2 Habitat Requirements

FIB species are birds requiring large forested areas to breed successfully and maintain viable populations. Most FIB species have suffered noticeable population declines in Maryland and elsewhere in the eastern United States concurrent with increased fragmentation of forest cover by urban development in the last 50 years. The Chesapeake Bay Critical Area Commission has identified an objective of preserving habitat for FIBs in lands surrounding the Chesapeake Bay (CAC, 2000).

2.4.1.2.2.3 Life History

The scarlet tanager breeds in woodland areas, constructing open-cup nests in the mid-story/canopy. Eggs are laid in clutch sizes of 3 to 5, with an incubation period of 13 to 14 days. Nine to 11 days are needed to fledge.

2.4.1.2.2.4 Population Dynamics

The scarlet tanager is a neotropical migrant that breeds in Maryland but winters primarily in Central and South America. Most of the FIB species that have suffered the greatest population declines over the last 50 years are neotropical migrants. Neotropical migrant FIB species are sensitive not only to changes in their breeding habitats in eastern North America but also to changes to their wintering habitats in Central and South America. The scarlet tanager typically occupies its breeding grounds in Maryland between May 25 and August 10 (CAC, 2000).

2.4.1.2.3 Insects

The Puritan Tiger Beetle (*Cicindela puritana*) and the northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*) have been identified as important because they are Federally threatened beetle species known to occur on sandy cliffs and beaches in Calvert County.

2.4.1.2.3.1 Puritan Tiger Beetle

2.4.1.2.3.1.1 Population Abundance and Distribution

The Puritan Tiger Beetle (*Cicindela puritana*), is known to presently inhabit only three locations: the Chesapeake Bay shoreline in Calvert County, around the mouth of the Sassafras River in eastern Maryland, and along the Connecticut River in Connecticut and Massachusetts. The Calvert County population has fluctuated greatly from peak numbers of over 9,000 in 1998 and 1988 to less than 6,000 in the past three years. A population of the Puritan Tiger Beetle has been known to be present at the shoreline of the CCNPP site since 1997. This site, like all others, has exhibited dramatic fluctuations in population size since that time. Counts of adults at the CCNPP site have varied more than some other locations, with the following estimates of adult numbers (USFWS, 1993):

YEAR	COUNT
1997	119
1998	616
1999	49
2000	367
2002	80
2003	226
2004	121
2006	111

2.4.1.2.3.1.2 Habitat Requirements

The Puritan Tiger Beetle has very specific habitat requirements. In Maryland, the larvae live in deep burrows, which they dig in sandy deposits on non-vegetated portions of bluff faces. They may also burrow at the base of bluffs in sediment deposits that have eroded from bluff faces. Chesapeake Bay populations are most abundant where bluffs are long and high, with little or no vegetation, and composed at least in part of yellow or red sandy soil. Wave-producing storms and concomitant erosion of bluffs are necessary to maintain the bare-bluff faces required for larval habitat. Larvae will not utilize densely vegetated bluffs; no tiger beetle larvae or adults were found to occupy bluffs stabilized by kudzu at Calvert Beach, though individuals were numerous on adjacent natural bluffs.

2.4.1.2.3.1.3 Life History

Puritan Tiger Beetles typically undergo a two-year larval period before emergence. Larvae hatch in late July or August as first instars. This stage lasts 2 to 4 weeks; larvae then molt and become second instars. Larvae generally over-winter as second instars and become active again (as evidenced by open burrows) the following spring, when they molt to the third instar.

2.4.1.2.3.1.4 Population Dynamics

Population variations are caused by year-to-year variations in climatic and other factors that affect survival and reproduction. Variations in recorded populations may, to a lesser extent, depend on survey conditions.

2.4.1.2.3.2 Northeastern Beach Tiger Beetle

2.4.1.2.3.2.1 Population Abundance and Distribution

There are two extant populations of *C. dorsalis* in southeastern Massachusetts, and the beetle has been found in the Chesapeake Bay region at 55 sites in Virginia and 13 sites in Calvert County, Maryland. The Chesapeake Bay populations include 15 with more than 500 adults (USFWS, 1994).

This species does not have an established population within the boundaries of the CCNPP site, and consequently this site has not been one of the target sites that are annually surveyed for *C. dorsalis* in Calvert County. However, in some years small numbers of adults (<25 individuals) have been observed at the far north end of the CCNPP site. These adults were found to be confined to an approximate 328 ft (100 m) section bordering Flag Ponds Nature Park, having apparently moved south from that area where a breeding population exists. No larvae or other evidence of a breeding population of *C. dorsalis* has been known in this northern section of the CCNPP site. No adults were found on the CCNPP site in 2006, nor were there any in the bordering section of Flag Ponds Nature Park. At Flag Ponds Nature Park, most of the adults

and all larvae of *C. dorsalis* are restricted to the northern half of this area, and only occasionally are small numbers of adults found in the southern end near the CCNPP site boundary.

2.4.1.2.3.2.2 Habitat Requirements

The beach ecosystem conducive to *C. dorsalis* survival is undisturbed by heavy human use, highly dynamic, and subject to natural erosion and accretion processes.

2.4.1.2.3.2.3 Life History

Larvae dig vertical burrows over a relatively narrow band of the upper intertidal to high drift zone, capturing small arthropod prey passing nearby. In the Chesapeake Bay region, adults emerge in mid-June, reach peak abundance by very early July, and begin to decline through August. The adults are active on warm, sunny days along the water's edge, where they are commonly seen feeding, mating, or basking. Mating and egg laying occur from late June through August. Egg laying occurs in burrows.

2.4.1.2.3.2.4 Population Dynamics

Populations are highly variable from year to year; the beetle is subject to local population extinctions and capable of dispersal and recolonization. The extirpation of *C. dorsalis* from most of its range has been attributed primarily to destruction and disturbance of natural beach habitat from shoreline developments, beach stabilization structures, and high recreational use.

2.4.1.2.4 Plants

Several plant species have been identified as important according to NUREG-1555 (NRC, 1999a). They are the showy goldenrod (*Solidago speciosa*), Shumard's oak (*Quercus shumardii*), spurred butterfly pea (*Centrosema virginianum*), tulip poplar (*Liriodendron tulipifera*), chestnut oak (*Quercus prinus*), mountain laurel (*Kalmia latifolia*), and New York fern (*Thelypteris noveboracensis*). The rare plant inspections were conducted in late July/early August 2006, October 2006, and April 2007 so as to coincide with the flowering period for each plant listed by the Maryland Department of Natural Resources as rare, threatened, or endangered for Calvert County, Maryland.

2.4.1.2.4.1 Showy Goldenrod

The showy goldenrod (*Solidago speciosa*) is listed as threatened by the State of Maryland. Showy goldenrod is a perennial forb with showy yellow flower heads that typically flowers in August and September in Maryland. The tops typically die in late October, and the roots over-winter underground and regenerate new tops in spring. Patches of showy goldenrod were observed in several locations around Camp Conoy in October 2006.

2.4.1.2.4.2 Shumard's Oak

The Shumard's oak (*Quercus shumardii*) is listed as threatened by the State of Maryland. Shumard's oak is a deciduous tree whose leaves and bark closely resemble the more common red oak (*Quercus rubra*). Trees appearing to be Shumard's oak were observed at multiple locations in the Johns Creek floodplain in 2006 and 2007.

2.4.1.2.4.3 Spurred Butterfly Pea

The spurred butterfly pea (*Centrosema virginianum*) is designated by Maryland as rare. It is not Federally-listed or listed by the State of Maryland as threatened or endangered. The Maryland Natural Heritage Program has a record of occurrence of the spurred butterfly pea on the CCNPP site southwest of the CCNPP Unit 3 construction area (MDNR, 2006). The plant was

observed at multiple locations in early August 2006 in Johns Creek floodplain but well west of the CCNPP Unit 3 construction area. It is a perennial, climbing, leguminous vine with light purple flowers with a wide tolerance of habitat conditions.

2.4.1.2.4.4 Tulip Poplar

Tulip poplar (*Liriodendron tulipifera*) is the most numerous and widespread tree in upland forests on the CCNPP site. It is a tall, fast-growing deciduous tree that favors upland habitats with mesic (deep, rich, and moist) soils. Many tulip poplars in the CCNPP Unit 3 construction area are over 20 inches (50 cm) DBH. It is a key contributor to the overall structure and ecological function of the plant communities and serves as an indicator of the overall ecological stability.

2.4.1.2.4.5 Chestnut Oak

Chestnut oak (*Quercus prinus*) is another common tree on the CCNPP site, dominating on dry, sloping lands adjoining forested stream valleys. Tulip poplar and chestnut oak together comprise the majority of the tree canopy in forested areas on and surrounding the CCNPP site.

The chestnut oak is a tall, slow-growing deciduous tree that occurs in primarily dry soils. Acorns from chestnut oaks on the CCNPP site provide a key food source for gray squirrels, blue jays, and many of the other observed wildlife species. Chestnut oak is the principal tree stabilizing many steep slopes adjoining the Johns Creek and Goldstein Branch floodplains. It is a key contributor to the overall structure and ecological function of the plant communities and serves as an indicator of the overall ecological stability.

2.4.1.2.4.6 Mountain Laurel

Mountain laurel (*Kalmia latifolia*) is the most widespread shrub on the CCNPP site. It forms dense shrub thickets in the understory of upland forests throughout the CCNPP site and the CCNPP Unit 3 construction area, including most of the steep slopes adjoining the Johns Creek and Goldstein Branch floodplains. Although primarily a shrub, many mountain laurels on the steep slopes near Johns Creek and south of Camp Conoy are exceptionally large, reaching heights of over 20 ft (6 m). It is a key contributor to the overall structure and ecological function of the plant communities and serves as an indicator of the overall ecological stability.

2.4.1.2.4.7 New York Fern

New York fern (*Thelypteris noveboracensis*) is the most widespread groundcover plant in the CCNPP Unit 3 construction area and elsewhere on the CCNPP site. It forms large, dense patches of groundcover throughout most of the forested floodplain lands, and many of the patches extend to adjoining slopes. Mountain laurel and New York fern together comprise the majority of the understory and groundcover vegetation in forested areas on and surrounding the CCNPP Unit 3 construction area. It is a key contributor to the overall structure and ecological function of the plant communities and serves as an indicator of the overall ecological stability.

2.4.1.2.5 Habitats

Three plant communities occurring on the CCNPP site are identified as important habitats: herbaceous marsh vegetation, poorly drained bottomland deciduous forest, and well-drained bottomland deciduous forest and are shown in ~~Figure 2.4-1~~ Figure 2.4-1. Herbaceous marsh vegetation and poorly drained bottomland deciduous forest meet the definition of wetlands established in 33 CFR 328.3 for the Federal Clean Water Act (CFR, 2007b) and COMAR 26.23.01.01(B)(62) for the Maryland Nontidal Wetland Protection Act (COMAR, 2007). The exact

boundaries of wetlands in the CCNPP site area were delineated between May 2006 and September 2006 using routine onsite procedures in the Corps of Engineers Wetlands Delineation Manual (USACE, 1987). The wetland boundaries were marked in the field using sequentially numbered flags. The coordinates for each flag were determined in the field as part of a land survey. Well-drained bottomland deciduous forest habitat in the CCNPP site area occurs in stream valley lands that are too well-drained to meet the regulatory definition of a wetland but still occur in floodplains.

Two areas outside of but close to the CCNPP site are also identified as important habitats. The first is the Flag Ponds Natural Area, situated immediately north of the CCNPP site. The second is Calvert Cliffs State Park, situated immediately north of the CCNPP site.

2.4.1.3 Habitat Importance

White-tail Deer: White-tail deer are habitat generalists but tend to favor areas at the edge of forests. Because of the ability of the white-tail deer to adapt to a variety of habitats, their populations are not generally sensitive to localized habitat changes.

Bald Eagle: Bald eagles tend to return and reuse nests from previous years. Any construction close to the active bald eagles nests on the CCNPP site as shown in [Figure 2.4-2](#) could discourage use of those nests in the future. Trees on top of the cliffs adjoining the Chesapeake Bay along the eastern edge of the CCNPP site provide some of the best bald eagle habitat in Calvert County. Local populations of bald eagle would be sensitive to loss or degradation of forested habitats adjoining the cliffs.

Scarlet Tanager (and other Forest Interior Birds): Recent aerial photographs of southern Calvert County suggest that the forested areas in the northern, southern and southwestern parts of the CCNPP site, including areas within the Unit 3 construction area draining to Johns Creek, provide some of the largest remaining blocks of unfragmented forest habitat in the region. Most areas of Calvert County outside of the CCNPP site and adjoining state parks (Calvert Cliffs State Park and Flag Ponds Natural Area) have experienced fragmentation caused by agricultural land uses, road construction, and construction of rural residences and small residential subdivisions. Therefore, the forested areas on the CCNPP site, including those close to Johns Creek in the CCNPP Unit 3 construction area, are likely valuable in sustaining localized populations of the scarlet tanager and other forest interior birds.

Puritan and Northeastern Beach Tiger Beetles: The undeveloped cliffs and beaches on the CCNPP site provide some of the best remaining habitat, both locally and nationally, for these two insect species with very specific habitat requirements.

Plants: None of the plant species identified as important are highly dependent on the CCNPP Unit 3 construction area or CCNPP site for their survival. Loss of suitable habitats in the CCNPP Unit 3 construction area would cumulatively contribute to the risk for population declines for each species but not likely result in immediate declines in regional populations.

2.4.1.4 Disease Vector and Pest Species

A disease vector is an organism (commonly an insect) that carries disease agents (commonly bacteria or fungi) to a receptor host, which can be man, domestic or wild animals, or crops or wild plants. The only disease vector known to occur on the CCNPP site is the deer tick (*Ixodes scapularis*), which transmits Lyme Disease to humans. Lyme Disease is a non-fatal but debilitating disease whose victims can display fever and severe joint pain. The causal agent is

a bacterium, *Borrelia burgdorferi*, which is transmitted by the deer tick from white-tail deer, squirrels, rodents, and other mammalian wildlife to humans.

No pest species are known to be widespread over the CCNPP site and surrounding areas. However, two non-native invasive plant species were found to be prevalent at several locations on the CCNPP site in 2006. The most widespread is phragmites, which forms dense stands over large areas of wetlands and dredge spoils in the CCNPP site. Phragmites is a perennial grass species with hollow culms (stems) that can grow to more than 10 ft (3 m) in height. Flowers develop by mid summer and are arranged in tawny spikelets with tufts of silky hair. Flowering and seed set occur between July and September. Germination occurs in spring on exposed moist soils. Vegetative spread by below-ground rhizomes (roots) can result in dense patches with up to 20 stems per square foot (200 stems per square meter). Phragmites is capable of vigorous vegetative reproduction and often forms dense, nearly monospecific stands. Although some phragmites stands are of genotypes native to North America, most large stands of phragmites in North America today are considered to be of non-native genotypes.

Another non-native invasive plant species, Japanese stiltgrass (*Microstegium vimineum*), forms scattered patches in the groundcover of some forested areas in the CCNPP site. It occurs mostly in areas with a history of soil disturbance, such as along the sides of roadways and trails. Where it occurs, it has likely precluded the development of other more ecologically valuable groundcover.

2.4.1.5 Wildlife Travel Corridors

Wildlife tends to move across landscapes using distinct corridors of favorable habitat. Movement of most forest wildlife across fragmented agricultural and suburban landscapes is enhanced by linear corridors of forest that can consist of forested hedgerows, forested stream valleys, or forested ridge tops. The minimum width for a forest corridor to benefit wildlife is not known but may vary among wildlife species depending on body size. Wildlife movement is also enhanced by strings of closely spaced patches of favorable habitat that form "stepping stones" across areas of unfavorable habitat. For forest wildlife, such stepping stones can consist of woodlots in agricultural landscapes or parks and other undeveloped forest tracts in suburban landscapes.

The landscape of southern Calvert County consists predominantly of forest land broken by small agricultural fields, small developed areas referred to as "town centers," rural residences on lots of one to a few acres, and small subdivisions of single-family houses on small lots. The landscape is crossed by a network of forested stream valleys that consist of forested floodplains adjoined by steep forested slopes. These stream valleys form corridors that facilitate the movement of forest wildlife around farm fields and developed areas.

The central part of the CCNPP site consists mostly of open land surrounding the existing reactors. The remainder of the CCNPP site, the Calvert Cliffs State Park to the south, and the Flag Ponds Natural Area to the north include large blocks of forest land. The forested stream valley surrounding Goldstein Branch and its tributaries along the western perimeter of the project site forms a corridor that may facilitate the north-south movement of wildlife. The forested stream valley surrounding Johns Creek and its tributaries may facilitate east-west movement.

2.4.1.6 Existing Natural and Man-Induced Ecological Effects

While most of the CCNPP site area north and south of the CCNPP Unit 3 construction area consists of contiguous forest cover, forest cover in the central part of the CCNPP site, including the north-central and northwestern parts of the CCNPP Unit 3 construction area, has been fragmented by development of facilities serving the existing reactors, by dredge material disposal, and by development of recreational facilities at Camp Conoy. This fragmentation has reduced the habitat value of some forested areas in the northern part of the CCNPP Unit 3 construction area and adjoining Camp Conoy for wildlife such as the forest interior bird species that require large blocks of forest to successfully live and nest. However, the observation of several forest interior bird species in forest lands south of Camp Conoy and along Johns Creek, indicates that forest cover in those areas qualifies as forest interior dwelling habitat.

Several areas of mixed deciduous forest on uplands west of Camp Conoy Road were clear cut for timber within the last 20 years but presently support robust stands of regenerated deciduous tree saplings. Some of the former clear cuts are on slopes near Johns Creek where forest interior bird species were observed in 2006. Although the clear cuts may have temporarily reduced habitat quality for forest interior bird species, the effects seem to have diminished with regeneration of tree cover. However, large canopy trees over 12 in (30 cm) DBH are limited to areas not recently clear cut, mostly on steep slopes and lands east of Camp Conoy Road. Prescribed burns are not conducted to manage vegetation anywhere on the CCNPP site, and there have not been any substantial wild fires in the past several decades.

Several upland areas in the northern part of the CCNPP Unit 3 construction area were used for farming until recently. These areas presently support old field vegetation. No areas on the CCNPP site are presently used for farming or grazing, although several large areas around the existing reactors, along paved roads, and in Camp Conoy are kept regularly mowed. Areas under several electric transmission lines in the CCNPP Unit 3 construction area and elsewhere on the CCNPP site are periodically mowed and treated with herbicides to prevent regeneration of trees under the conductors.

There is no evidence that the CCNPP Unit 3 construction area has been subjected to substantial recent environmental stresses such as insect or disease outbreaks or storm damage. Occasional fallen canopy trees were observed throughout forested areas of the CCNPP Unit 3 construction area, especially on the slopes adjoining Johns Creek and its headwaters. These trees may have been felled by the winds from Hurricane Isabel, which passed through Calvert County on September 19, 2005. Large areas of oak-dominated forests in central Maryland experienced multiple rounds of defoliation by gypsy moths in the late 1980s. However, large numbers of dead trees as might have resulted from a localized gypsy moth (*Lymantria dispar*) outbreak were not observed anywhere within the CCNPP Unit 3 construction area during the 2006 floral survey.

2.4.1.7 Ongoing Ecological and Biological Studies

The only ecological or biological investigations performed on the CCNPP site within the last 5 years were the surveys described herein. Those studies are now complete.

2.4.1.8 Regulatory Consultation

The Maryland Natural Heritage Program, operated by the Maryland Department of Natural Resources, was consulted for information on known occurrences of Federally-listed and State-listed threatened, endangered, or special status species and critical habitats (MDNR,

2006). Identification of the important species discussed above was based in part on information provided by that consultation.

2.4.1.9 Offsite Transmission and Access Corridors

There are no new offsite transmission or access corridors associated with the construction and operation of CCNPP Unit 3.

2.4.2 Aquatic Ecology

2.4.2.1 Aquatic Habitats

2.4.2.1.1 Freshwater Bodies Onsite

Freshwater bodies at the CCNPP site are described in Section 2.3.1. A topographic map is provided as ~~Figure 2.3-4~~ ~~2.3-4~~ which shows the aquatic habitats. In addition, a separate wetlands delineation study was conducted. It describes the area as a steeply rolling landscape dissected by a dendritic pattern of stream valleys with narrow floodplains adjoined by steep side slopes whose grade exceeds 25% in places. Large areas in the north-central part of the site have been graded to accommodate existing facilities and the dredge spoil disposal area. The eastern part of the site, including most lands east of Camp Conoy Road, drains directly into the Chesapeake Bay. Drainage enters a series of unnamed intermittent and first-order perennial streams that flow generally eastward. The streams become increasingly incised as they approach the cliffs and then cascade over the cliffs and across the narrow beach into the bay. All stream reaches on the site are non-tidal; the cliffs prevent tidal influence from extending west of the beach.

In the north-central part of the site, large areas have been graded to accommodate existing facilities and a dredge spoil disposal area. The eastern part of the site, including most lands east of Camp Conoy Road, drains directly into the Chesapeake Bay. Drainage enters a series of unnamed intermittent and first-order perennial streams that flow generally eastward. The streams become increasingly incised as they approach the cliffs and discharge across the narrow beach into the Bay. All stream reaches on the site are nontidal; the cliffs prevent tidal influence from extending west of the beach.

The western part of the site, west of Camp Conoy Road, drains toward the Patuxent River. Lands west of Camp Conoy Road drain into intermittent headwaters of Johns Creek, which flows west under Maryland Route 2/4 and ultimately to the Patuxent River. Most lands in the northwestern part of the CCNPP site flow into the headwaters of the Goldstein Branch. Goldstein Branch flows south, close to the western CCNPP site perimeter, entering Johns Creek just east of Maryland Route 2/4. A small area in the northern part of the CCNPP site drains to the north and east into small streams that flow to the Chesapeake Bay north of the CCNPP Units 1 and 2; these are shown as Branch 1 and Branch 2 on ~~Figure 2.3-2~~ ~~Figure 2.3-2~~. The dredge spoil disposal area drains to the man-made Lake Davies, which discharges into a tributary to Goldstein Branch as well as through wetlands to Johns Creek. Three other ponds retain surface water onsite before discharging to Chesapeake Bay: Camp Conoy Fishing Pond, Pond 1 and Pond 2.

Surveys of the benthic macroinvertebrates and fish inhabiting selected onsite streams and ponds were conducted during September 2006 and March 2007. Benthic invertebrates were collected using techniques developed for low gradient, non-tidal streams (USEPA, 1999). Fish sampling followed the guidance provided in the Maryland Biological Stream Survey Sampling Manual (MDNR, 2001). At each sampling station, standard water quality field measurements were made, and water samples were collected for laboratory analysis of

nutrients and other physico-chemical parameters. At the same time, habitat quality was assessed using the survey sampling guidance (MDNR, 2001). The results of the surveys are summarized for each water body in the following sections.

2.4.2.1.1.1 Johns Creek

Two locations in Johns Creek were sampled: one upstream and one downstream of a dewatered reach that had filled in with an invasive reed (*Phragmites*). Water quality at both locations indicated a healthy stream. Benthic invertebrate and fish assemblages at the downstream location were excellent, and the overall habitat assessment produced an optimal score. The upstream location, however, supported only one species of fish, the eastern mudminnow (*Umbra pygmaea*), which is a common stream species that is extremely tolerant of poor water quality.

Differences in the benthic community of the two reaches were also apparent. The upstream location was numerically dominated by oligochaetes and chironomids; the downstream location by ~~amphipods~~ amphipods during the fall and amphipods and ostracods during the spring. However, both locations supported at least two of the three groups of aquatic insects that are considered indicators of nondegraded streams (Ephemeroptera, Plecoptera, and Trichoptera). Although both locations scored in the "optimal" category on the habitat assessment, an evaluation of the subscores reveals that the upstream site has poor pool variability, marginal epifaunal substrate and cover, and suboptimal pool substrate, sediment deposition, and channel sinuosity. The difference in the overall scores of the two reaches is attributable to substrate, cover, and pool variability. Johns Creek downstream station had the highest score of all locations sampled during both fall and spring.

Results of the biological survey are presented in Table 2.4-2 ~~Table 2.4-2~~. Water quality data are in Table 2.3-31 ~~Table 2.3-39~~.

2.4.2.1.1.2 Goldstein Branch

One location in Goldstein Branch, upstream from its confluence with Johns Creek, was sampled. This location had similar dissolved oxygen and pH, but higher conductivity, alkalinity, and total dissolved solids (TDS), compared with Johns Creek. Despite water quality indicators of a healthy stream, only one species of fish, the American eel (*Anguilla rostrata*), was collected at Goldstein Branch. Benthic invertebrate diversity and abundance were lower than in Johns Creek, Creek during fall, but within acceptable limits, higher during spring. The reach supported all three groups of aquatic insects that are considered indicators of nondegraded streams (Ephemeroptera, Plecoptera, and Trichoptera). The overall habitat assessment produced an optimal score; individual subscores were similar to the upstream location at Johns Creek.

Results of the biological survey are presented in Table 2.4-3 ~~Table 2.4-3~~. Water quality data are presented in Table 2.3-31 ~~Table 2.3-39~~.

2.4.2.1.1.3 Impoundments

The four ponded waterbodies are neither functionally related nor similar in water quality. They are discussed here together for purposes of conciseness only.

Water quality in Lake Conoy was representative of a healthy pond. Six species of fish were collected; the eastern mosquitofish (*Gambusia affinis*) and the bluegill (*Lepomis macrochirus*) were numerically dominant, which is typical of an impoundment of this nature. The benthic invertebrate assemblage was more diverse than in the other three impoundments. Two of the

three taxa of aquatic insects that are sensitive to degraded aquatic conditions, mayflies and caddisflies, were present in Lake Conoy; the stoneflies (Plecoptera) were absent from all impoundments at the site.

Neither Lake Davies nor the ponds had adequate dissolved oxygen (greater than 5 ppm) to be considered a healthy ~~habitat~~. habitat during fall, but dissolved oxygen was high and similar to the other sampling locations during the spring survey. In Lake Davies, the dissolved oxygen dropped as low as 2.2 ppm at the bottom. In Pond 2, dissolved oxygen was less than 1.0 ppm. Fish species in the ponds were the same as those collected in Lake Conoy, except for the absence of the larger gamefish (white crappie (*Pomoxis annularis*) and largemouth bass (*Micropterus salmoides*)). Benthic invertebrate assemblages were dominated by chironomids in the two lakes, and by oligochaetes in the two ponds. Neither caddisflies nor stoneflies occurred in any samples from Lake Davies or the ponds, although mayflies were present.

Results of the biological survey are presented in ~~Table 2.4-4~~ Table 2.4-4. Water quality data are in ~~Table 2.3-31~~ Table 2.3-39. Invertebrate and fish data represent the cumulative totals from all samples in each water body. No federal or state rare, threatened or endangered aquatic species was reported during site surveys. However, the American eel (*Anguilla rostrata*) was collected from every water body sampled, except Lake Davies.

2.4.2.1.1.4 Nontidal Wetlands

Nine assessment areas were described based on field surveys conducted in ~~Fall, 2006-2006~~ and early 2007. Wetland Assessment Areas are defined as contiguous wetland and aquatic areas with a high degree of hydrological interaction and biological similarity. Assessment Areas I, II, ~~III,~~ IV, V, and VIII correspond to small unnamed watersheds that drain directly to the Chesapeake Bay (Assessment Areas Area III and VIII ~~flow~~ flows out of the proposed project plant and construction area before reaching the Chesapeake Bay). Assessment Areas IV, V, and VI form the Johns Creek watershed (upstream of Goldstein Branch). Assessment Area IV constitutes the up-gradient headwaters to Johns Creek and their adjoining wetlands, while Assessment Area V constitutes the main channel and adjoining wetlands of Johns Creek. Assessment Area VI comprises a sequence of man-made basins carrying runoff from the Lake Davies dredged material disposal area to Johns Creek. Assessment Area VII constitutes the headwaters, main channel, and associated wetlands of Goldstein Branch. Assessment Area VIII consists of a small cluster of seepages and headwaters that flow north to ultimately contribute to Woodland Branch and St. Leonard Creek, which eventually drain into the Patuxent River. Assessment Area IX comprises a series of seepages and headwaters that drain into a storm drain system under the existing developed portion of the CCNPP site. Wetland functions and values for the nine assessment areas at the site are provided in Table 2.4-5.

The greatest overall functions and values are provided by Assessment Area V, which consists of the main channel of Johns Creek and its adjoining wetlands. Within the CCNPP site, Johns Creek remains largely free of human disturbance. It flows through a stream valley bounded throughout on both sides by mature deciduous forest cover free of agricultural or urban development. The channel is generally diffuse and poorly defined, spreading its flow through dense wetland vegetation that is more than 100 ft (30.5 m) in width at many locations. The vegetation is capable of attenuating flow velocity, filtering out dissolved nutrients or contaminants in the water and causing suspended sediment to settle out before flowing downstream to the tidal waters of St. Leonard's Creek.

Many of the same functions and values are provided by Assessment Area IV, which consists of the seepages, springs, and headwaters that flow into the upper end of Johns Creek. The reach

of Johns Creek east of Maryland Route 2/4 constitutes one of the largest remaining systems of headwaters and stream whose watershed is still largely forested.

The Camp Conoy fishing pond (part of Assessment Area II) has a long history of enjoyment by Constellation employees and their families; recreation is therefore identified as a principal function for Assessment Area II.

2.4.2.1.2 Chesapeake Bay

2.4.2.1.2.1 Importance of the Bay as a Resource

The Chesapeake Bay is fed by freshwater flows from a 64,000 square mile (166,000 km²) drainage basin that touches parts of 6 states, as well as the District of Columbia. This freshwater is mixed in almost equal proportions with saline water from the Atlantic Ocean, forming, the largest estuary in the U.S. In addition to its role as a center of commerce and shipping, the Bay is home to dozens of species of wildlife and produces millions of pounds of seafood for domestic and international markets. In recent years, government, industry, and the public have focused efforts on reversing the processes that have led to a decline in the quality of the bay for both wild species and the human population. Pollution, nutrient enrichment, and over-harvesting of estuarine species are among the key threats to the health of the bay.

2.4.2.1.2.2 Review of Key Data Sources

Key data sources of information on the Chesapeake Bay are found with the following Federal, State, and private organizations:

- ◆ The Chesapeake Bay Program (CBP) is a regional partnership responsible for developing and implementing restoration plans for the Chesapeake Bay. The CBP includes state and federal government resource managers as well as citizen advisory groups in the Chesapeake Bay area. In addition to annual reports on the overall condition of the Chesapeake Bay and progress of the restoration, the CBP provides data on the life history, distribution, abundance, and harvest of numerous estuarine and marine species in the Chesapeake Bay.
- ◆ The Maryland Department of Natural Resources (MDNR) provides commercial landings data for a variety of fish and shellfish species. Crab, oyster, and striped bass data are available for the Chesapeake Bay region; all other species are reported on a statewide basis. The MDNR data is used to describe trends in commercial harvest, and to support the designation of a species as "important."
- ◆ The Atlantic States Marine Fisheries Commission coordinates the conservation and management of the near shore fishery resources shared among the 15 Atlantic states. The Atlantic States Marine Fisheries Commission provides data on the life history, distribution, abundance, and status of the marine finfish and shellfish that it manages.
- ◆ The NOAA Fisheries Office of Science and Technology provides commercial landing data for either statewide or a Maryland-specific portion of the Chesapeake Bay.
- ◆ The Chesapeake Bay Foundation is a not-for-profit organization devoted to improving the overall environment of the Chesapeake Bay area. The foundation produces an annual report summarizing the condition of key components of the Chesapeake Bay ecosystem and issues a "health index" for the Chesapeake Bay.

2.4.2.1.2.3 Overall Condition of Chesapeake Bay Ecosystem

Both government and non-government reports on the status of the Chesapeake Bay reach the same conclusion: the overall health of the ecosystem remains degraded. Much of the extensive restoration effort expended during the last 20 years has merely kept the Chesapeake Bay from becoming even more severely impacted by the growing human population in the area.

The Chesapeake Bay Foundation assigned the Chesapeake Bay an overall score of 29 (out of a possible 100) based on measures of pollution, habitat, and fisheries. Despite the failing grade, the score was 2 points higher than in the last three years, indicating a slight improvement.

The CBP annual health assessment reached the following conclusions:

- ◆ Water Quality – Most of the Chesapeake Bay’s waters are degraded. Each summer, a large expanse of its waters does not hold enough oxygen to support striped bass, crabs and oysters. Algal blooms fed by nutrient pollution block sunlight from reaching the underwater bay grasses needed to support aquatic life. Sediment from urban development and agricultural lands is carried into the Chesapeake Bay, clouding its waters and covering critical oyster reef habitat. Currently, about one-third of the Chesapeake Bay water quality goals are being met.
- ◆ Habitats and Lower Food Web – The Chesapeake Bay’s critical habitats and food webs are at risk. Nutrient and sediment runoff have harmed bay grasses and bottom habitat. Excessive algae growth has pushed the Chesapeake Bay food web out of balance. A large portion of the Chesapeake Bay’s wetlands has been lost to development. Currently, the Chesapeake Bay’s habitats and lower food web are at about a third of desired levels.
- ◆ Benthic Organisms - In 2005, about 41% of the Chesapeake Bay’s benthic habitat was considered healthy as measured by the composite Benthic Index of Biotic Integrity. This decline is likely due to persistent low dissolved oxygen levels during the summer. Reduced amounts of nutrients, sediment and chemical contaminants flowing into the Chesapeake Bay will help these bottom dwelling communities improve.
- ◆ Phytoplankton – microscopic plants commonly called algae are an excellent indicator of the health of the Chesapeake Bay’s surface waters, as they are especially sensitive to changes in nutrient pollution and water clarity. Phytoplankton form the base of the food web. While increased populations provide more food to organisms further up the food web, too much or the wrong type of algae can harm the overall health of the Chesapeake Bay. In some cases, harmful algal blooms can impact human health. Scientists assess microscopic algal community health with a Phytoplankton Index of Biotic Integrity. Data from Spring 2005 show that about 9% of the Chesapeake Bay’s phytoplankton communities were considered healthy.
- ◆ Fish and Shellfish - Many of the Chesapeake Bay’s fish and shellfish populations are below historic levels. The number of adult blue crabs is below the long term average for the seventh straight year and oyster populations are at or near historic lows. American Shad are recovering slowly, while other species like striped bass show mixed signals. Current striped bass populations exceed restoration goals, but approximately 60% to 70% are infected by a disease called mycobacteriosis. Researchers are currently working to understand the extent and severity of the disease and the extent to which environmental conditions in the Chesapeake Bay influence it.

2.4.2.2 Identification of Important Estuarine Species

NUREG-1555 (NRC, 1999a) defines important species as: 1) species listed or proposed for listing as threatened, endangered, candidate, or of concern in 50 CFR 17.11 and 50 CFR 17.12 (CFR, 2007a), by the U.S. Fish and Wildlife Service, or the state in which the project is located; 2) commercially or recreationally valuable species; 3) species essential to the maintenance and survival of rare or commercially or recreationally valuable species; 4) species critical to the structure and function of local terrestrial ecosystems; or 5) species that could serve as biological indicators of effects on local terrestrial ecosystems.

A list of species considered important in the project area was compiled based on these criteria and summarized in Table 2.4-6. A single species may meet more than one of the five criteria. A 6th criterion, status as a potential nuisance to plant operation, is not discussed, as no nuisance aquatic species are expected to occur in the vicinity of the project area.

- ◆ Species Under Special Protection - Threatened, Endangered, or Candidate Species: Any species that is known to occur or could occur in the Chesapeake Bay or near the CCNPP site that is afforded special protection under the federal Endangered Species Act, or under the equivalent State of Maryland law, is defined as an important species.
- ◆ Commercially Harvested Species: Finfish and shellfish that rely on habitat in the vicinity of the CCNPP site during any life stage, and are commercially harvested to a substantial degree, are considered important resources.
- ◆ Recreational Target Species: Finfish and shellfish that rely on habitat in the vicinity of the CCNPP site during any life stage, and are preferentially taken by recreational anglers or trappers to a substantial degree are considered important resources.
- ◆ Keystone Species: Any species that is essential to maintaining the structure and function of the estuarine ecosystem in the vicinity of the CCNPP site will be identified as important.
- ◆ Indicator Species: A species whose abundance, distribution, or condition is known or believed to be a reliable predictor of the status of another species of interest is considered an important species.

In addition, Section 5.3.1.2 includes information regarding additional estuarine and marine species not discussed in this section, e.g., Weakfish (*Cynoscion regalis*), Summer Flounder (*Paralichthys dentatus*), Spotfin Killifish (*Fundulus luciae*), and the Soft Shell Clam (*Mya arenaria*). These estuarine and marine species were determined not to be important species as defined above, because they do not meet any of the six criteria.

2.4.2.2.1 Description of Important Species

Each important species is described in terms of the following parameters, which provide a context within which site-related effects may be measured and interpreted:

- ◆ Critical life support (natural history) requirements, including spawning areas, nursery grounds, food habits, feeding areas, wintering areas, and migration routes (including maps)
- ◆ Temporal and three-dimensional spatial distribution and abundance, especially in the discharge area and receiving water body (including maps)

- ◆ Seasonal catch data (location, volume, and value) for commercially and recreationally important species
- ◆ Existing stressors and adverse effects not related to the proposed project

2.4.2.2.2 Threatened or Endangered Species

Two fish and two sea turtle species in the project area are afforded special protection under the Endangered Species Act: the Shortnose and Atlantic Sturgeon, and the Loggerhead and Kemp's Ridley Turtle.

2.4.2.2.2.1 Shortnose Sturgeon

The Shortnose Sturgeon (*Acipenser brevirostrum*) is an anadromous bony fish that has historically inhabited sluggish tidal rivers and nearshore marine waters of the western Atlantic coast, including Chesapeake Bay. The ancestral range of this species is believed to extend from the St. John River in New Brunswick, Canada, to the St. Johns River in Florida. It moves up river channels to spawn in fresh water. Although this fish once supported an enormous international export business, the stock plummeted during the 1900s due to overharvesting. The Shortnose Sturgeon was listed as federally endangered in 1967, and is considered extremely rare under Commonwealth of Maryland law. Deteriorating water quality (especially low dissolved oxygen) and placement of dams that restrict its access to historical spawning grounds have likely inhibited the strong comeback that could have been expected once legal protections were put in place.

In 1979, Baltimore Gas and Electric researchers captured a Shortnose Sturgeon during trawl studies in the vicinity of the CCNPP site. Other isolated individuals may use the area intermittently; however, no Shortnose Sturgeon is known to have spawned in the Chesapeake in decades. In August, 2006, a female with eggs was captured as she swam up the Potomoc, supposedly to spawn. It is not known whether she spawned, but biologists consider it doubtful, since males are exceedingly rare in the area. Another female was captured near the Choptank River entrance in 2007. Intensive efforts by biologists to document the presence of this species in the Chesapeake are ongoing. No Shortnose Sturgeon has been captured in impingement samples at CCNPP Units 1 and 2.

2.4.2.2.2.2 Atlantic Sturgeon

A larger, longer-lived relative of the Shortnose Sturgeon, the Atlantic Sturgeon (*Acipenser oxyrinchus*) once supported a robust fishery in the Chesapeake Bay. It is currently on the candidate species list maintained by NOAA Fisheries, because it is undergoing a status review under the Endangered Species Act. The decline of the Atlantic Sturgeon was not as sudden or steep as that of the Shortnose Sturgeon, but its populations are currently depleted. In late 1997, a moratorium on the harvest of wild Atlantic Sturgeon was implemented and remains in effect until there are at least 20 protected year classes in each spawning stock, which may take up to 40 or more years.

The sturgeon's dependence on both estuarine and freshwater habitat makes it susceptible to harm from habitat degradation due to pollution, physical barriers to spawning areas, channelization or elimination of backwater habitats, de-watering of streams, and physical destruction of spawning grounds.

The MDNR conducted a trial stocking experiment in 1996 to investigate the viability of juvenile hatchery fish that were released on the Eastern Shore. During the subsequent 5 years, 14% of the juveniles were recaptured, suggesting that habitat conditions were adequate to

support growth and survival. Recent changes to the water quality goals in the Chesapeake Bay are expected to result in habitat improvements for both sturgeon species.

2.4.2.2.2.3 Atlantic Loggerhead Turtle

Loggerheads (*Caretta caretta*) occur throughout the temperate and tropical regions of the Atlantic, Pacific, and Indian Oceans. The Loggerhead is the most abundant species of sea turtle found in U.S. coastal waters, including the Chesapeake Bay. Approximately 2,000 to 10,000 young Loggerheads forage in the bay each summer for horseshoe crabs, jellyfish, and mollusks. They are most often seen near the mouths of rivers, in water greater than 13 ft (4 m) deep. Most sightings are in the Virginia portion of the bay, where salinity is higher. In addition to the well-known juveniles, it has been reported that up to 5% of the Loggerheads in Chesapeake Bay are adult females who are taking time off between nesting efforts.

The stock structure of the U.S. population of Loggerheads is poorly understood. Some evidence suggests that individuals nesting in Georgia represent a population distinct from the Florida nesters. If so, the northern population may be more severely threatened. NOAA Fisheries suggests that it may become necessary to consider listing them as endangered. Adult Loggerheads are known to make extensive migrations between foraging areas and nesting beaches. The Virginia Institute of Marine Science Sea Turtle Program actively tracks individuals that nest on Virginia beaches in an effort to determine the migration routes of these turtles. At present, the place of origin of an individual turtle cannot be determined. Turtles feeding in the Chesapeake Bay may represent a number of nesting populations worldwide.

At the global level, the primary threat to Loggerhead turtle populations is incidental capture in fishing gear, especially in longlines and gillnets, but also in trawls, traps and pots, and dredges. NOAA Fisheries is currently implementing a program to evaluate the incidence of bycatch of sea turtles in various types of gear, including pound nets in the Chesapeake Bay.

2.4.2.2.2.4 Kemp's Ridley Turtle

The Kemp's Ridley Turtle (*Lepidochelys kempii*) is one of the smallest of the sea turtles, with adults reaching about 2 ft (0.6 m) in length and weighing up to 100 lbs. The Kemp's Ridley Turtle has been on the endangered species list since 1970. Nesting occurs in spring on Mexican beaches. After leaving the nesting beach, hatchlings are believed to become entrained in eddies within the Gulf of Mexico, where they are dispersed within the Gulf and Atlantic by oceanic surface currents until they reach about 7.9 in (20 cm) in length, (or about two years of age) at which size they enter coastal shallow water habitats.

A sizeable group of the Kemp's Ridley Turtle spends the summers in the Chesapeake Bay, although most remain in the higher salinity waters of the Virginia portion of the bay. This turtle is a shallow water benthic feeder with a diet consisting primarily of crabs.

The principal threats to this species occur on the nesting beaches, where both deliberate and accidental disturbances interfere with nesting success and in accidental take by fisheries vessels. Restoration of the species requires protecting sub-adult and adult animals by the use of turtle excluder devices on shrimp trawls wherever turtles occur.

2.4.2.2.3 Harvested Fish

Nine species of fish that are harvested commercially or recreationally in the Chesapeake Bay are considered important in the project area, as shown in [Table 2.4-6](#).

2.4.2.2.3.1 American Shad

The American Shad (*Alosa sapidissima*) is one of six shad and herring species to occur in the Chesapeake Bay. From January to June, shad older than about four years old enter the Chesapeake Bay to spawn in fresh or near-fresh tributaries as far north as the Susquehanna River. Shad usually complete the spawning run without feeding and move far enough upstream for the eggs to drift downstream and hatch before reaching saltwater. After spawning, the adult either dies or resumes its long pelagic migration. Within a month, young fish are feeding on zooplankton in the Chesapeake Bay. More than 70% die before leaving the estuary.

Historically, it is likely that American Shad spawned in suitable waters across the Atlantic coast. Current spawning runs are limited by physical barriers as well as degraded water quality. These impediments to spawning, added to overharvesting, spurred Maryland to implement a fishing moratorium in 1980. Virginia concurred in 1994, making it illegal to harvest American Shad anywhere in the Chesapeake Bay. Stocks are being enhanced in three ways: (1) Restoring native spawning habitat by removing dams or building fishways; (2) supplementing wild stocks with hatchery fish; and (3) improving water quality.

A low of several hundred American Shad per year was reported in the early 1980s. The most recent data available show an average of 101,140 per year between 2003 and 2005. The increased abundance falls short of the long term restoration goal of two million fish per year. The Atlantic States Marine Fisheries Commission has identified habitat areas of particular concern for the American Shad, including spawning sites; nursery areas; inlets that provide access to coastal bays, estuaries and riverine habitat upstream to spawning grounds; and sub-adult and adult nearshore ocean habitat.

The abundance of the closely related Hickory Shad (*Alosa mediocris*) dropped so low in the Chesapeake Bay in the late 1970s that a moratorium on commercial and recreational capture in Maryland's portion of the Chesapeake Bay was implemented in 1981. Although the population is increasing, the moratorium remains in place. Ocean landings of hickory shad are still allowed and Maryland recorded landings less than 4000 lb (1800 kg) in 2004.

2.4.2.2.3.2 Bay Anchovy

The Bay Anchovy (*Anchoa mitchilli*) is the most abundant fish in the Chesapeake Bay. Through predator-prey relationships, the Bay Anchovy forms a link between zooplankton and top game fish. Striped bass, bluefish, and other sport fish, as well as some birds and mammals, depend on the abundance of Bay Anchovy to sustain them. In one study, Bay Anchovy accounted for up to 65% of the biomass consumed by striped bass in the Bay.

The Bay Anchovy spawns throughout the Bay. In summer months from 1995 to 2000, Bay Anchovy eggs comprised more than 94% of the fish eggs in the plankton of the Middle Bay portion of the Chesapeake Bay. More than 75% of all larval fish collected in ichthyoplankton tows were Bay Anchovy.

The Bay Anchovy is not commercially harvested. However, Bay Anchovy populations in the Chesapeake Bay fluctuate annually. Since 1994, the Bay Anchovy population in the Chesapeake Bay has been on a long term decline, the first ever recorded for the species. In recent years, recruitment of Bay Anchovy has been lower than expected, based on the various trawl surveys. Although the specific causes of the decline are not well understood, it is known that oxygen levels below 3.0 mg/l can be lethal to eggs and larvae. Dissolved oxygen greater than 2.0 mg/l is critical for adult survival.

2.4.2.2.3.3 Atlantic Menhaden

Like the Bay Anchovy, the Atlantic Menhaden (*Brevoortia tyrannus*) is a key component of the estuarine food web, consuming plankton and small fish while being consumed by larger predatory fish. Adults are present in near proximity to the CCNPP site year round. In the Middle Bay, spring egg collections were comprised of more than 80% menhaden. Unlike the Bay Anchovy, however, the Atlantic Menhaden is directly targeted by commercial harvesters. In 2004, more than 3 million lb (1.4 million kg) were landed in Maryland.

Atlantic Menhaden stocks across the Atlantic coast are stable. However, reduced abundance in the Chesapeake Bay, a key nursery area, has been reported. Due to the concern over the steady decline in recruitment in the Chesapeake Bay, fisheries managers have recently (starting in 2006) capped the commercial harvest of Atlantic Menhaden for 5 years. The limits on harvest of Atlantic Menhaden are based on the importance of Atlantic Menhaden to predatory fish, including the striped bass and bluefish.

2.4.2.2.3.4 Atlantic Croaker

The Atlantic Croaker (*Micropogonias undulates*) is one of the top ten recreational finfish in the Chesapeake Bay. Adults are abundant in the bay from March to October. They move offshore and south along the Atlantic coast in the fall. Juveniles are present essentially year round. Spawning occurs over the shelf in fall and winter.

The Atlantic Croaker is a bottom-feeding generalist, consuming benthic invertebrates and some fish. It is associated with muddy substrates in depths less than 400 ft (120 m), in a wide range of salinity and temperature conditions. All of the major predatory fish in the Chesapeake Bay, including striped bass, flounder, shark, spotted seatrout, other croaker, bluefish and weakfish, include croaker in their diet.

The Atlantic Croaker is a perennial favorite of the human population, as well, ranking within the top 10 species caught by anglers. Historically, the Chesapeake Bay region accounted for the majority of Atlantic Coast croaker landings. Recreational landings in the region have been declining since 1986.

After a sharp decline in commercial landings during the 1970s and 1980s, Atlantic croaker landings in Maryland increased to close to 1 million lb (454,000 kg) per year for most of the 1990s. In fact, commercial landings in 2001 were higher than at any time since 1956, indicating a rebound of the Atlantic Croaker fishery in the Chesapeake Bay.

2.4.2.2.3.5 Striped Bass

The Striped Bass (*Morone saxatilis*) is the dominant predator in the Chesapeake Bay. Juveniles and adults occur in the Chesapeake Bay year round. The abundance and distribution of the Striped Bass affect countless other species, including the Atlantic Menhaden. Juvenile Striped Bass feed on zooplankton and benthic invertebrates. Adults eat a variety of other important fish, including Bay Anchovy, Atlantic Menhaden, Spot, Atlantic Croaker, and White Perch.

This large anadromous species has a complex life history that centers on the Chesapeake Bay, where historically, about 90% of the Atlantic population spawned. Distribution patterns are influenced by the age, sex, degree of maturity and the river in which they were born. Successful completion of the striped bass life cycle requires a variety of habitats including spawning sites, nursery areas, passages between inland spawning and estuarine nursery habitats, and offshore wintering grounds.

Commercial and recreational landings in the Chesapeake Bay generally increased from the 1930s through the mid-1970s, then declined sharply through the mid-1980s. Aside from direct overfishing, it is thought that low dissolved oxygen increased stress on the fish, making them susceptible to disease. A moratorium on all striped bass fishing in Maryland in 1985, and in Virginia in 1989, allowed the population to rebound. According to the Maryland Department of Natural Resources (MDNR), 602,506 lb (273,292 kg) of striped bass were harvested from the south central area of the Chesapeake Bay near the CCNPP site in 2004. This was one of the top 10 years of greatest harvest since data collection began in 1944. Concerns about the future of this fishery remain. A large percentage of striped bass appear to be malnourished and up to 70% of the population is infected with mycobacteriosis, a type of wasting disease. The impact of this disease of sustainability of the stock is not well understood at this time.

2.4.2.2.3.6 Spot

The Spot (*Leiostomus xanthurus*), like the Atlantic Croaker, occupies a middle position in the Chesapeake Bay food web, as a consumer of benthic invertebrates and as prey for striped bass, bluefish, weakfish, shark and flounder. The Spot is a generalized omnivorous bottom feeder that ranges throughout the Chesapeake Bay from April through October. The Spot is broadly tolerant of temperature and salinity fluctuations. Spawning occurs offshore, then the young move into the estuary for rearing.

In addition to their central role in the food web, Spot are important to both commercial harvesters and recreational anglers. Inter-annual variability in spawning conditions leads to unpredictable landings. No long term declines, however, have been noted. Commercial landings are highest during the fall migration out of the Chesapeake Bay, when they are taken as by-catch from the pound net fishery in the lower Bay. According to MDNR, commercial catches in Maryland have exceeded 100,000 lb (45,000 kg) annually since 1998.

2.4.2.2.3.7 White Perch

White Perch (*Morone americana*) migrate from the open Chesapeake Bay into the tidal-fresh portions to spawn from April to June over the sandy bottoms of brackish or tidal-fresh rivers. Young White Perch remain nearshore downstream from their hatching areas for several months, foraging for insect larvae and crustaceans. Adult White Perch overwinter in the deeper channels of the Chesapeake Bay. They never move into the open ocean. White Perch are heavy consumers of fish eggs, including those of the striped bass.

The White Perch is considered a delicious table fish, and supports an important recreational fishery in the Chesapeake Bay. It is also commonly taken as by-catch by commercial harvesters. Large schools of White Perch are vulnerable to capture when they aggregate in large schools to feed on herring. According to MDNR, commercial catches in Maryland have exceeded 1-million lb (453,000 kg) annually since 1995.

2.4.2.2.3.8 Bluefish

The migratory Bluefish (*Pomatomus saltatrix*) visits the Chesapeake Bay area from spring to fall; it spawns offshore in the Chesapeake region in July. Juvenile Bluefish move into the bay during late summer. Larger juveniles and adult bluefish have broad habitat tolerances, and range throughout the Chesapeake Bay in search of forage fish. Its diet is varied, consisting of fish species at all depths, including Atlantic Menhaden, Weakfish, and Croaker. As a large, mobile predator, it competes with the striped bass for food.

About 20% of the Bluefish caught commercially in the U.S. are landed in the Chesapeake Bay, making bluefish a significant fishery in the area. The majority of the catch is in the Virginia

portion of the Chesapeake Bay. Historic highs and lows in the harvest have occurred during the last 70 years. Until about 1992, commercial landings of Bluefish in Maryland routinely exceeded 200,000 lb (90,000 kg) annually. Although overall stocks of Bluefish in the Atlantic are increasing, landings in the Chesapeake Bay are on the decline, possibly due to over harvesting. According to MDNR, about 52,000 lb (23,000 kg) of Bluefish were landed by commercial fishermen in 2004.

The Bluefish ranked first in number and weight among sportfish in the Chesapeake Bay for nearly 20 years, until the current decline began in 1990. Recreational landings outnumber commercial landings by at least 5 times. MDNR implemented a management plan in 1990 in response to concerns about declining regional bluefish stocks.

2.4.2.2.3.9 American Eel

The American, or common, Eel (*Anguilla rostrata*) is a widely distributed catadromous species, which lives predominately in rivers, lakes and estuaries, but spawns in the Atlantic Ocean. The American Eel is abundant year-round in all tributaries to the Chesapeake Bay. During the 5 to 20 years the American Eel spends in the Chesapeake Bay, it feeds at night on insects, mollusks, crustaceans, worms, and other fish.

In all its life stages, the American Eel is an important prey species, as it is consumed by a variety of fish, aquatic mammals, and birds. The American Eel is caught in commercial eelpots. Most eels landed in the Chesapeake Bay area are juveniles, or "glass eels," which are exported to Europe and Asia. Recreational anglers do not typically target the eel for consumption, although they are often bought for use as bait for striped bass and other sport fish.

In 2005 the Atlantic States Marine Fisheries Commission determine that eel abundance had fallen since the late 1970s to mid-1980s, and was at or near historic lows along the entire Atlantic coast. The decline was not attribute to any particular cause although several possible factors such as harvest, habitat loss, predation, hydroturbine mortality, disease, parasitism, and reduced fecundity resulting from pollution were noted. The commercial catch in 1981 was more than 700,000 lb (317,000 kg) in both Maryland and Virginia, but has been declining ever since.

The American Eel is currently being considered for special protection under the Endangered Species Act, which may affect the way the species is managed by the Atlantic States Marine Fisheries Commission. The American Eels mature slowly (reproducing at age 8 to 24 years), and are vulnerable to targeted harvest during seasonal migrations, which occur before the first spawning of new adults.

2.4.2.2.4 Harvested Invertebrates

Two species of invertebrates have been historically important to commercial and recreational harvesters near the CCNPP site, and throughout the Chesapeake Bay: the Blue Crab and the American Oyster. Both species are now severely depleted, and under strict management provisions.

2.4.2.2.4.1 Blue Crab

The Blue Crab (*Callinectes sapidus*) plays a vital role in the Chesapeake Bay region as both predator and prey. The Chesapeake Bay is the largest producer of crabs in the country, supporting major commercial and recreational fisheries. In most years, at least 30% of the nation's Blue Crabs come from Chesapeake Bay waters. According to the CBP, annual commercial harvests can approach 100 million lb (45.4 million kg) of crab.

Blue Crabs range from the upper Chesapeake Bay near freshwater tributaries down to the mouth of the Chesapeake Bay. Although mating occurs in the areas near the CCNPP site, the females typically migrate down-bay to a spawning and hatching area approximately 70 mi (110 km) south of the CCNPP site, where an appropriate salinity of approximately 23 to 28 parts per thousand occurs.

The number of mature female Chesapeake Bay Blue Crabs, or spawning stock, remains below the long term average. The 2006 winter survey conducted by MDNR showed that the total number of crabs in the Chesapeake Bay was low compared with historical averages, but stable. In 2006, the Chesapeake Bay Foundation issued a Chesapeake Bay score of 38%, or grade C for the Blue Crab. Reasons for the observed reduction in harvest are complex, but may include over-harvesting, loss of habitat, and degradation of water quality. Juvenile crabs are closely tied to submerged aquatic vegetation, and may suffer a decline when submerged aquatic vegetation is unavailable for use as habitat and nursery grounds. Crabs are bottom feeders, and can be sensitive to low dissolved oxygen near the substrate.

2.4.2.2.4.2 American Oyster

The American Oyster (*Crassostrea virginica*) is highly valued in the Chesapeake Bay, but has been declining since the late 1800s due to over-harvesting, parasites, and poor water quality. After 2 to 3 weeks in the plankton, or as weak swimmers, larval oysters attach to the Chesapeake Bay substrate in a place where they will become permanently attached as adults. From there, a healthy oyster provides many services to the Chesapeake Bay ecosystem, including filtering the water, producing planktonic larvae that feed a variety of larval fish, and creating a physical structure with its shell that many other animals use for shelter and foraging.

Efforts to restore the oyster fishery include expanding the amount of clean, hard surfaces for oyster spat (juvenile oysters) to settle, increasing the number of breeding adult oysters and developing methods for controlling oyster diseases.

Oyster breeding and nursery areas occur near the CCNPP site. New beds were created during CCNPP Units 1 and 2 construction to mitigate habitat loss. However, oysters have not occurred in sufficient number for commercial fishery near the CCNPP site since at least 1971.

2.4.2.2.5 Other Important Resources

In addition to the fish and invertebrates already mentioned, submerged aquatic vegetation and plankton are considered important resources in the project area.

2.4.2.2.5.1 Submerged Aquatic Vegetation

Submerged aquatic vegetation (SAV) includes a group of about 16 rooted plant species that live within the shallows of the Chesapeake Bay and its tributaries. This vital resource provides refuge and nursery habitat for numerous organisms, increases the structural complexity of the bottom, adds oxygen to the water, and prevents erosion and sedimentation. In addition, microscopic algae and protozoa use the leaves of SAV as attachment locations. Small fish are attracted to these areas for feeding. Decaying leaves are consumed by zooplankton, which are then eaten by larval fish.

SAV is considered an indicator group because the plants respond quickly and dramatically to degradation of water quality. At one time, SAV covered about 200,000 shallow and shoreline acres (81,000 hectares) of the Chesapeake Bay. Acreage has fluctuated widely over the past few decades. In 2004, bay grasses covered 72,935 acres (29,516 hectares). Although this value

represented an increase over previous years, it is still only about 42% of what experts believe to be necessary for complete restoration of function. Acreage of SAV in the middle and lower Chesapeake Bay has diminished even more significantly over the past decade. In addition, late in 2005 much of the SAV in the lower Chesapeake Bay died, possibly due to high temperatures.

In 2006, the Chesapeake Bay Foundation issued a Chesapeake Bay score of 18% (failing grade) in the SAV category. No SAV were located during the surveys conducted to support CCNPP Unit 3 in the immediate vicinity of the CCNPP site.

2.4.2.2.5.2 Plankton (Phytoplankton and Zooplankton)

The term plankton refers to organisms of the open water that drift on currents and tides. Phytoplankton are plants or algae that manufacture their own food using nutrients in the water. Zooplankton are animals that generally consume phytoplankton. A small but significant component of the plankton consists of bacterial cells. Although most plankton are tiny, they range in size from microscopic bacteria and plants to larger animals, such as jellyfish.

In the Chesapeake Bay, plankton provides the nutritional support for the entire fisheries industry. Plankton are short-lived and highly responsive to both positive and negative environmental changes. As such, plankton are useful indicators of overall environmental quality. Phytoplankton abundance is a readily visible measure of invisible nutrient loads in the Chesapeake Bay. The composition and abundance of zooplankton are predictors of near term fisheries abundance, as most larval fish rely on zooplankton to grow to a size large enough to compete as a predator. Some species, such as Blueback Herring, Alewife, and Shad, rely on mesozooplankton food their entire lives. The influence of zooplankton on Striped Bass and White Perch in Chesapeake Bay is well-documented. Striped Bass, White Perch, and Yellow Perch depend on mesozooplankton and microzooplankton as larvae, and shift to larger prey as they grow. The role of zooplankton in the Chesapeake Bay is an area of active research.

Zooplankton are categorized by size as the barely visible microzooplankton (20 μm - 0.2 mm) and mesozooplankton (0.2 - 20 mm), and the more familiar macrozooplankton (20 mm - 20 cm), which includes ctenophores (Comb Jellyfish), shrimp, amphipods, euphausiids, and larval fish. The megazooplankton (20 cm - 2 m) are the true jellyfish.

The overall health of the zooplankton in the Chesapeake Bay is suboptimal, and worsening in most reaches:

- ◆ Despite universal improving trends, zooplankton food levels for migratory fish larvae are currently inadequate in most major spawning/nursery areas.
- ◆ Sharp declines in mesozooplankton abundance were noted in almost all of the middle and lower Chesapeake Bay mainstem and lower tributary reaches. At the station nearest to the CCNPP site (just north of the CCNPP site), a 32% drop in abundance from 1984 to 2002 was reported.
- ◆ In contrast, abundances of the smaller microzooplankton increased in the mid Chesapeake Bay. The overall zooplankton food base for important forage fish such as bay anchovy, menhaden, and immature stages of other resident species is declining and shifting to smaller sizes.

However, some positive trends have been documented, likely in response to improvements in water quality.

- ◆ Significant increases in mesozooplankton abundance indicate an improving trend in the overall food base for fish in some areas, especially where water quality significantly improved, as in the Patuxent River.

Relationships among various components of the plankton are complex, and not well-understood. For example, phytoplankton food quality, which is influenced by water quality, appears to be an important factor affecting mesozooplankton. However, high phytoplankton biomass does not necessarily produce high mesozooplankton abundances. The specific phytoplankton groups, such as diatoms, influence the success of the zooplankton that consume them.

Monitoring of phytoplankton using a Phytoplankton Index of Biotic Integrity showed that about 9% of the Chesapeake Bay's phytoplankton communities were considered healthy in Spring 2005.

2.4.2.2.6 Nuisance Species

No nuisance aquatic species occur in the vicinity of the CCNPP site.

2.4.2.3 Habitat Importance

Onsite streams and ponds were described in terms of the typical surface water habitats in the area. Headwater streams in general are considered important; however, there is nothing of regional significance about these particular streams. All of the onsite aquatic species mentioned in this section are common in the area. No loss of onsite stream and pond critical habitat is expected.

The Chesapeake Bay is considered important estuarine habitat to most, if not all, of the estuarine species identified in the area. However, none of the important species in the vicinity of the project are endemic to Chesapeake Bay. All of them range widely throughout the mid-Atlantic coast, and most occur in the Gulf of Mexico, as well.

The portion of the Chesapeake Bay nearest the CCNPP site is of lower relative importance than other areas of the bay. Estuarine species that use the bay as nursery grounds need the submerged aquatic vegetation (SAV) and tidal marshes for nutrient-rich forage for the larvae and young of the year, as well as for protective cover from predators. The area near the CCNPP site has no SAV, and does not provide critical habitat for any species.

The National Marine Fisheries Service (NMFS) designated Essential Fish Habitat (EFH) for each life stage of federally managed marine fish species in the Chesapeake Bay area; the bluefish is the only important species in the project area that is federally managed, and for which EFH has been designated. EFH is defined in Title 50 CFR Section 600.10 (CFR, 2007c) implementing the EFH provisions of the Magnuson-Stevens Fishery Conservation and Management Act (USC, 1996) as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity. Bluefish eggs and larvae are found only offshore, so no EFH occurs in Chesapeake Bay. For juvenile bluefish, all major estuaries between Penobscot Bay, Maine and St. Johns River, Florida, are EFH. Generally juvenile bluefish occur in North Atlantic estuaries from June through October, Mid-Atlantic estuaries from May through October, and South Atlantic estuaries March through December, within the "mixing" and "seawater" zones. Adult bluefish are found in North Atlantic estuaries from June through October, Mid-Atlantic estuaries from April through October, and in South Atlantic estuaries from May through January in the "mixing" and "seawater" zones. Bluefish adults are highly migratory and distribution varies seasonally and according to the size of the individuals comprising the

schools. Bluefish are generally found in normal shelf salinities (greater than 25 parts per thousand).

Four threatened and endangered aquatic species known to occur in the area include two species of sturgeon and two species of sea turtles. No sturgeon is known to have spawned in the Chesapeake in decades. The sea turtles that occasionally use the Chesapeake Bay spawn much further south, outside the Chesapeake Bay watershed.

2.4.2.4 Other Preexisting Environmental Stresses

Pollution, nutrient enrichment, and over-harvesting of estuarine species are among the key threats to the health of the Chesapeake Bay. Based on conditions throughout 2006, the Patuxent River Watershed portion of the Chesapeake Bay received a grade of D- (23%) based on very poor water clarity and chlorophyll *a*, moderate dissolved oxygen conditions, poor benthic and phytoplankton scores, and loss in bay grasses.

Section 2.4.2.1.2.3 includes information on the types of stresses that organisms have experienced.

2.4.2.5 Transmission and Access Corridors

There are no new offsite transmission or access corridors associated with CCNPP Unit 3.

2.4.3 References

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Table 2.4-1— Important Terrestrial Species and Habitats

(Page 1 of 2)

Name	Common Name	Description	Location	Rationale
Mammals				
<i>Odocoileus virginianus</i>	White-tail Deer	Large, herbivorous mammal. Favors forest edge habitat. Game species.	Observed frequently in all habitats in the CCNPP site area. Likely to be abundant elsewhere on the CCNPP site and surrounding landscape.	Recreationally valuable species
Birds				
<i>Piranga olivacea</i>	Scarlet Tanager	Neotropical migratory bird that breeds in North America in late spring and early summer and winters in Central and South America in fall and winter. Favors large tracts of forest, especially forest with lots of dead or declining trees, for breeding territory.	Heard frequently throughout forested areas on the CCNPP site. Likely common in other forested areas in surrounding landscape.	Designated as "Forest Interior Bird" (FIB) by Maryland Department of Natural Resources
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Large, piscivorous (fish-eating) bird.	Maryland Natural Heritage Program has a record of a nest on the Chesapeake Bay shoreline in the southern part of the CCNPP site, just south of the CCNPP Unit 3 construction area. Observed flying along cliffs east of the CCNPP site.	Federal Protected Maryland Threatened
Insects				
<i>Cicindela dorsalis dorsalis</i>	Northeastern Beach Tiger Beetle	Small beetle inhabiting sandy beaches.	Cliffs and beaches (primarily beaches) on Chesapeake Bay (eastern edge of the CCNPP site and north of CCNPP Units 1 and 2).	Federal Threatened Maryland Endangered
<i>Cicindela puritana</i>	Puritan Tiger Beetle	Small beetle inhabiting sandy shores on fresh and brackish waters. Limited to shorelines of Connecticut River in Connecticut and Chesapeake Bay in Maryland. Feeds on other insects (i.e., insectivorous). Spends approximately 23 months of roughly 2 year life cycle in shallow underground tunnels in sand.	Cliffs and beaches on Chesapeake Bay (eastern edge of the CCNPP site).	Federal Threatened Maryland Endangered
Plants				
<i>Centrosema virginianum</i>	Spurred Butterfly Pea	Perennial forb.	Maryland Natural Heritage Program has record of occurrence on the CCNPP site southwest of the CCNPP Unit 3 construction area. Observed in August 2006 in John's Creek floodplain.	Maryland Rare
<i>Kalmia latifolia</i>	Mountain Laurel	Evergreen woody shrub.	Forms dense stands in the understory of many upland forested areas throughout the CCNPP Unit 3 construction area, the CCNPP site, and surrounding landscape.	Ecosystem Critical, Biological Indicator

Table 2.4-1— Important Terrestrial Species and Habitats

(Page 2 of 2)

Name	Common Name	Description	Location	Rationale
<i>Liriodendron tulipifera</i>	Tulip Poplar	Deciduous tree.	Dominant tree in most upland forest areas in the CCNPP Unit 3 construction area, the CCNPP site, and surrounding landscape.	Ecosystem Critical, Biological Indicator
<i>Quercus prinus</i>	Chestnut Oak	Deciduous tree.	Dominant tree in most sloping and dry upland forest sites in the CCNPP Unit 3 construction area, the CCNPP site, and surrounding landscape.	Ecosystem Critical, Biological Indicator
<i>Quercus shumardii</i>	Shumard's Oak	Deciduous tree.	Possible occurrence in John's Creek floodplain.	Maryland Threatened
<i>Solidago speciosa</i>	Showy Goldenrod	Perennial forb with showy yellow flowerheads consisting of hundreds of small yellow flowers.	Several locations on forest edges in Camp Conoy.	Maryland Threatened
<i>Thelypteris noveboracensis</i>	New York Fern	Perennial fern.	Forms dense groundcover in large patches in Mesic Deciduous Forest and Bottomland Deciduous Forest.	Ecosystem Critical, Biological Indicator
Habitats				
Herbaceous Marsh Vegetation		Dominated by sedges, rushes, bulrushes, and grasses and forbs typical of poorly drained soils.	Fringes of Lake Conoy and other ponds; floodplain areas on the CCNPP Unit 3 construction area and elsewhere on the CCNPP site that lack tree canopy.	Wetland Floodplain
Poorly Drained Bottomland Deciduous Forest		Dominated by red maple, sweet gum, and black gum with understory of ferns.	Primarily in bottoms of stream valleys.	Wetland Floodplain
Well-Drained Bottomland Deciduous Forest		Dominated by tulip poplar, American beech, sweet gum, black gum, and red maple.	Primarily in bottoms of stream valleys.	Wetland Floodplain
Flag Ponds Nature Park		327 acres (132 hectares) park comprising a matrix of sandy beach, tidal marsh, freshwater marsh, freshwater pond, and forest habitats.	Directly north of the CCNPP Unit 3 construction area.	County-Owned Preserve
Calvert Cliffs State Park		3,030 acres (1,226 hectares) forested park containing same upland and wetland habitats as natural areas on CCNPP site area. 1079 acres (436.7 hectares) are designated as wildland area and 550 acres (222.6 hectares) are designated as public hunting area.	Directly south of the CCNPP Unit 3 construction area.	State-Owned Preserve

Table 2.4-2— Survey Results for John's Creek (Fall 2006)

Parameter	Upstream (JCUS-01)**	Downstream (JCDS-01)**
Total Number of Individual Invertebrates	1,628	1,414
Total Number of Invertebrate Taxa	29	33
Total Number of Individual Fish	4	105
Total Number of Fish Species	1	8
Overall Habitat Quality *	147	167

Notes:

* Any value greater than 139 is considered optimal.

** Sample points from biological survey

Table 2.4-3— Survey Results for Goldstein Branch (Fall 2006)

Parameter	GB-01**
Total Number of Individual Invertebrates	1,238
Total Number of Invertebrate Taxa	24
Total Number of Individual Fish	65
Total Number of Fish Species	7
Overall Habitat Quality *	149

Notes:

* Any value greater than 139 is considered optimal.

** Sample point from biological survey

Table 2.4-4— Dip Net Survey Results for Lakes and Ponds (Fall 2006)

Parameter	Lake Davies	Pond 1	Pond 2	Lake Conoy
Total Number of Individual Invertebrates	10,719	2,972	1,817	4,157
Total Number of Invertebrate Taxa	14	20	21	31
Total Number of Individual Fish	81	8	56	213
Total Number of Fish Species	1	4	5	6

Note:

Overall habitat quality values are only calculated for streams.

Table 2.4-5— Summary of Functions and Values for Assessment Areas

Function or Value	Wetland Assessment Areas*									
	I	II	III	IV	V	VI	VII	VIII	IX	
Functions										
Groundwater Recharge/Discharge	X	X	X	X	X		X	X		
Floodflow Alteration										
Fish and Shellfish Habitat		X			X		X			
Sediment/Toxicant Retention		X	X	X	X	X	X	X		
Nutrient Removal		X	X	X	X	X	X	X		
Production Export		X	X	X	X	X	X	X		
Sediment/Shoreline Stabilization		X			X	X				
Wildlife Habitat	X	X	X	X	X	X	X	X	X	
Values										
Recreation		X	X	X	X		X	X		
Educational/Scientific Value			X	X	X			X		
Uniqueness/Heritage		X	X	X	X			X		
Visual Quality/Aesthetics		X						X	X	
Legend:										
X Function or Value Present										
<table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td style="padding: 2px 5px;">X</td> </tr> </table>										X
X										
Function or Value Principal										
Note:										
* As shown in the Wetlands Delineation Study										

Table 2.4-6— Important Species in the Chesapeake Bay Near the CCNPP Site

Species (Scientific Name)	Commercially Harvested	Recreational Target	Keystone Species	Indicator Species
Threatened and Endangered Species				
Shortnose Sturgeon * <i>Acipenser brevirostrum</i>				
Atlantic Sturgeon <i>Acipenser oxyrinchus</i>	X (Moratorium since 1997)			
Atlantic Loggerhead Turtle * <i>Caretta caretta</i>				
Kemps Ridley Turtle * <i>Lepidochelys kempii</i>				
Harvested Fish				
American Shad <i>Alosa sapidissima</i>	X			
Bay Anchovy <i>Anchoa mitchilli</i>	X		X	
Atlantic Menhaden <i>Brevoortia tyrannus</i>	X		X	X
Atlantic Croaker <i>Micropogonias undulatus</i>	X	X		
Striped Bass <i>Morone saxatilis</i>	X	X		
Spot <i>Leiostomus xanthurus</i>	X	X		
White Perch <i>Morone americana</i>	X	X		
Bluefish <i>Pomatomus saltatrix</i>	X	X		
American Eel <i>Anguilla rostrata</i>	X	X		
Harvested Invertebrates				
Blue Crab <i>Callinectes sapidus</i>	X	X		
American Oyster <i>Crassostrea virginica</i>	X			X
Other Important Resources				
Submerged Aquatic Vegetation (SAV)			X	X
Plankton			X	X

Note:

* Threatened and Endangered Species are not allowed to be taken in the Chesapeake Bay.

Figure 2.4-1— Plant Community (Natural Habitat Map)

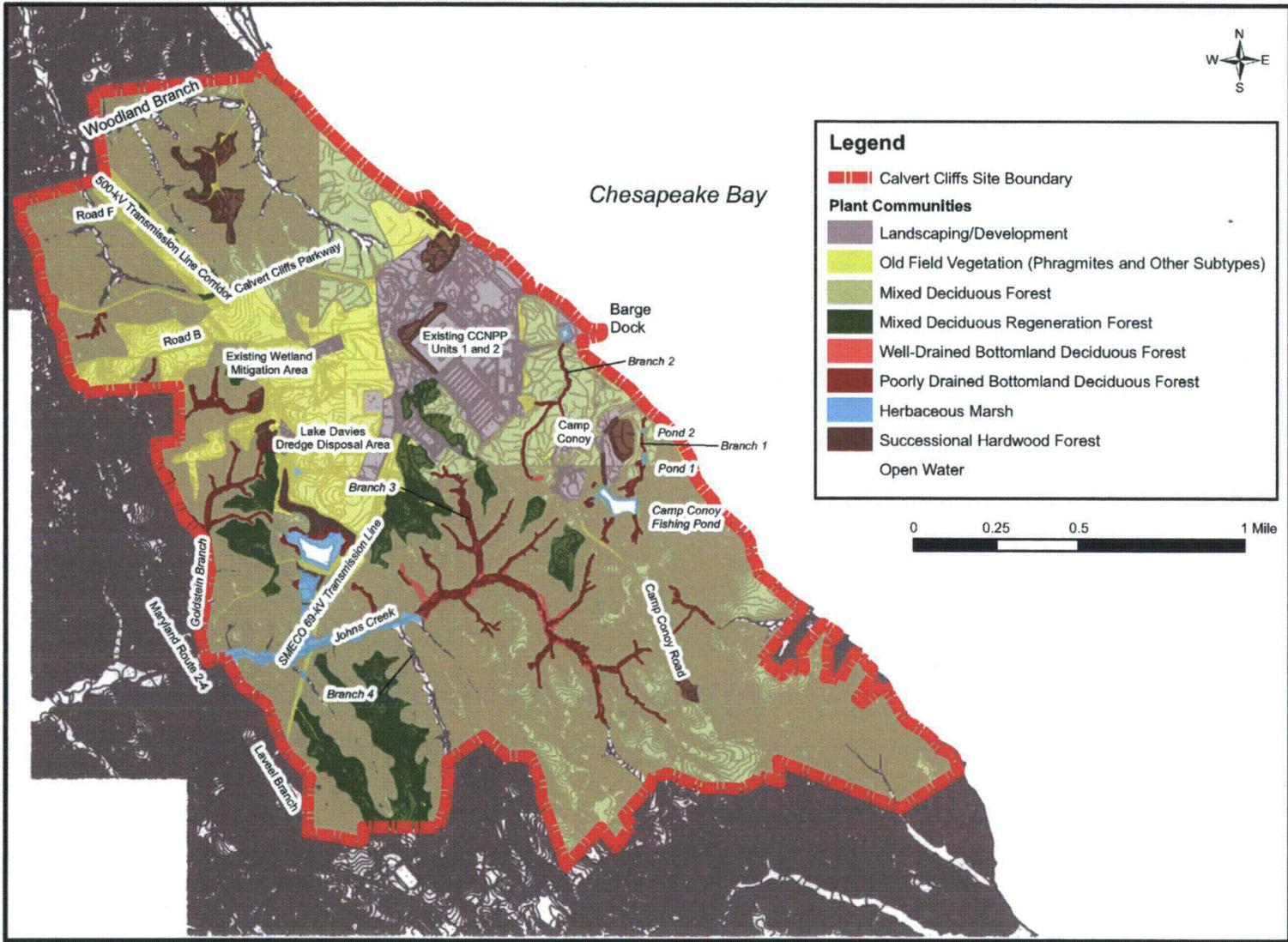
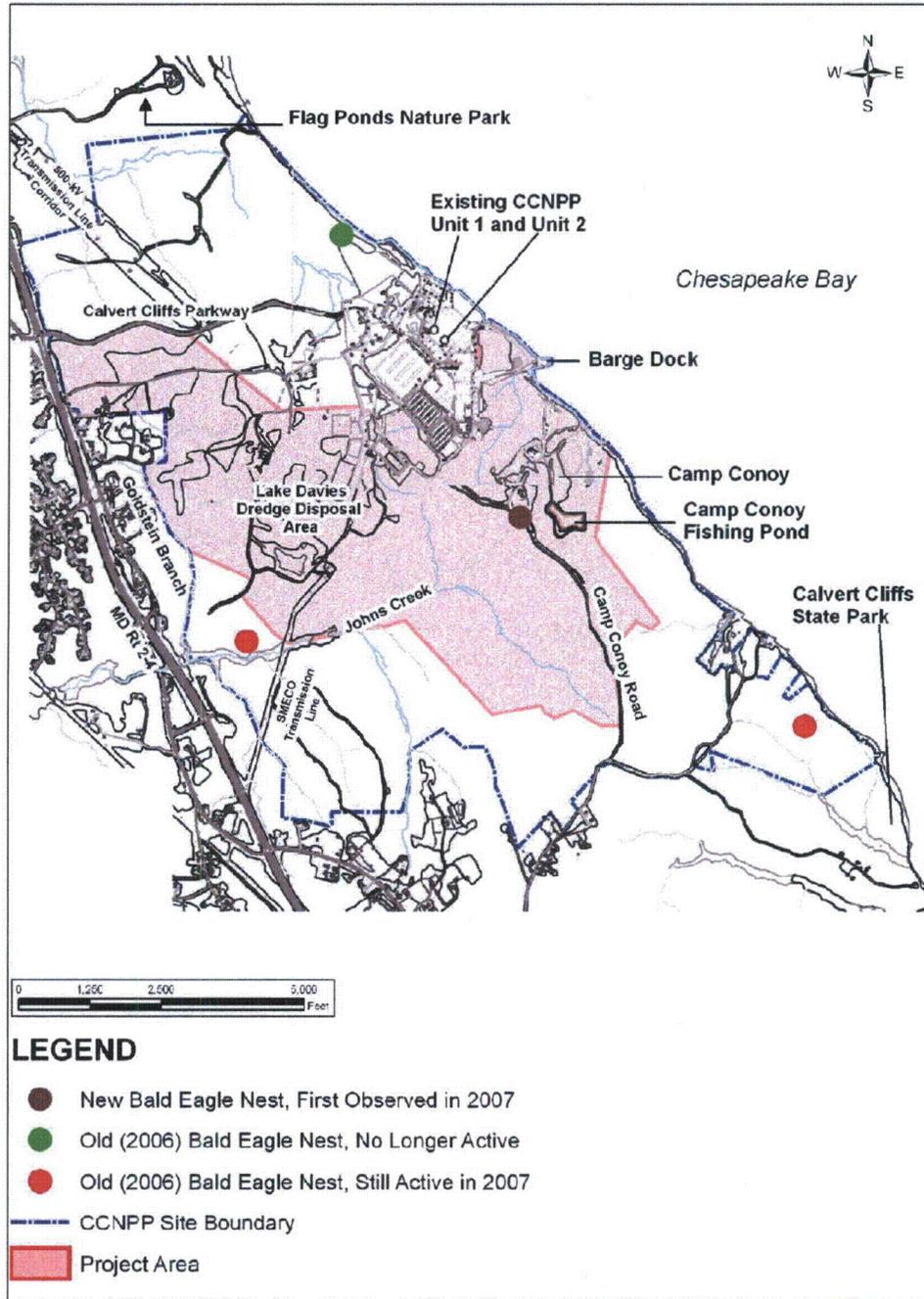


Figure 2.4-2— Approximate Locations of Known Bald Eagle Nests – April 2007



2.5 SOCIOECONOMICS

This section describes the socioeconomic characteristics of the areas that could potentially be impacted by the construction and operation of Calvert Cliffs Nuclear Power Plant (CCNPP) Unit 3 on the CCNPP site. This section contains four subsections: 1) Demography, 2) Community Characteristics, 3) Historic Properties, and 4) Environmental Justice. These sections include a discussion about the socioeconomic characteristics of the 50 mi (80 km) comparative geographic area and the two-county region of influence (ROI) that includes Calvert County and St. Mary's County, which are the primary areas of concern for the socioeconomic impact assessment. In addition, socioeconomic characteristics are also described for the 10 mi (16 km) emergency planning zone and the 2 mi (3.2 km) low population zone (LPZ), which are consistent with NUREG-1555 (NRC, 1999).

The 50 mi (80 km) comparative geographic area was established by using the CCNPP site as the center point and drawing a 50 mi (80 km) radius circle around the CCNPP site. This comparative geographic area is consistent with NUREG-1555 (NRC, 1999), as a basis for conducting the socioeconomic analyses and evaluating the potential radiological and accident impacts.

The region of influence (ROI) for the socioeconomic analyses include Calvert County and St. Mary's County, Maryland. The borders of these counties extend less than 30 mi (48 km) from the CCNPP site. These adjacent counties are located in the southern part of Maryland on a peninsula bounded by the Chesapeake Bay and the Patuxent River. Potential socioeconomic impacts, if any, arising from the proposed plant are likely to be confined to these two counties because a majority of the existing workforce for CCNPP Units 1 and 2 reside in these counties and it is assumed that the potential in-migrating construction and operational workforces for CCNPP Unit 3 are most likely to reside in this same two-county ROI. As of November 2006 a total of 833 employees work at the CCNPP site. Of this total, 793 of them are Constellation Energy employees and 40 are contractors. As shown in ~~Table 2.5-1~~ Table 2.5-1, more than 91% of the current workforce at CCNPP resides in Calvert County or St. Mary's County. Of the 833 employees at the CCNPP site, approximately 560 (67%) of the workers had a home address in Calvert County and approximately 200 (24%) of these workers had a home address in St. Mary's County.

2.5.1 Demography

2.5.1.1 Current Demographic and Economic Characteristics

The following sections describe the current demographic and economic characteristics for the 50 mi (80 km) comparative geographic area, the two-county region of influence, the 10 mi (16 km) emergency planning zone, and the 2 mile (3.2 km) LPZ. Most demographic data generated by the U.S. Census Bureau and used in this analysis are from the year 2000, sometimes updated to 2003, 2004 or 2005, in order to have comparable data for both counties in the region of influence. Census Bureau data is used because it is the most reliable, most often cited, and most detailed data available for comparison of multiple jurisdictions or areas. The U.S. Census Bureau gathers more detail and updates demographic data more often in the metropolitan areas than in the non-metropolitan or micro communities. In some cases recent socioeconomic data is was not available for St. Mary's County.

2.5.1.1.1 50 mi (80 km) Geographic Area of Comparison

~~Figure 2.5-1~~ Figure 2.5-1 presents geographical details of the area within a 50 mi (80 km) radius of the CCNPP site. The map shows overlaying circles which mark 10, 20, 30, 40, and 50 mi (16, 32, 48, 64, and 80 km) distances from the CCNPP site.

The nearest major population centers within about 50 mi (80 km) of the CCNPP site are Washington, D.C., located approximately 55 driving miles (88 km) to the northwest and Annapolis, Maryland, 50 driving miles (80 km) to the north. Smaller cities and towns within 50 driving miles (80 km) include Glenarden, 50 driving miles (80 km) away, North Beach, 26 driving miles (42 km), La Plata at 36 driving miles (58 km), Leonardtown which is 20 driving miles (32 km) and Seat Pleasant at 49 driving miles (79 km). Calvert County is part of the Washington-Arlington-Alexandria, DC-VA-MD-WV Metropolitan Statistical Area (MSA) and shares a high degree of economic and social integration with the metropolitan area. St. Mary's County is a part of the much smaller Lexington Park, Maryland Micro Area.

~~Table 2.5-2~~ Table 2.5-2 (USCB, 2000c) (USCB, 2005) presents the demographic data for the residential population within each of the five 10 mi (16 km) circles radiating from the CCNPP site. These demographic characteristics – age and sex distributions, racial and ethnical distributions, and household income figures – are presented to familiarize the reader with the statistical profile of a portion of southern Maryland in 2000.

In 2000, approximately 90%, or 2,878,003 people, of the 3,195,170 people that resided within the 50 mi (80 km) radius of the CCNPP site lived more than 30 mi (48 km) from the CCNPP site. Within the 50 mi (80 km) radius, less than 7% were under 5 years old, 76% were 18 years old or older, and nearly 10% were 65 years old or older. Almost 52% of the population was female. The ethnic composition of the 50 mi (80 km) radius included 53% Caucasians, 36% African-Americans, and 8% were persons of Hispanic/Latino origin. Median household income in the area was \$57,464 and 9% of the population lived below the poverty level. (USCB, 2000c) (USCB, 2005)

The Census Bureau does not report information about the transient population in this area.

2.5.1.1.2 Two-County Region of Influence

The two-county region of influence, Calvert County and St. Mary's County, has experienced steady population growth for the last three and one-half decades, from 1970 to 2005 (MDDP, 2005). ~~Table 2.5-3~~ Table 2.5-3 presents the population data for select years from 1990 to 2080 in these two Maryland counties (MDDP, 2005) (USCB, 2005). Within the ROI, the population grew an annual average of 2.36% from 1990 to 2000. From 2000 to 2010, the population of Calvert County is expected to grow an annual average of 2.5%, about two times the annual average State of Maryland population growth rate of 1.08% per year. During that same period, the population of St. Mary's County is expected to grow an annual average of 2.25%, also substantially more than the average growth rate in Maryland. The population in the ROI is expected to grow from 160,774 in 2000 to 502,840 in 2080.

~~Table 2.5-4~~ Table 2.5-4 (USCB, 2005) presents data about selected demographic and economic characteristics for the years 2000 to 2004 for persons in Calvert County and St. Mary's County. The population in the ROI grew from 160,774 in 2000 to 181,355 in 2004, an annual average of 3.0%. During that same period, Calvert County grew from 74,563 people to 86,434, an annual average of 4.0%. St. Mary's County grew from 86,211 to 94,921, an annual average of 2.5%. These growth rates are significantly greater than the average annual growth rates of 1.2% for the State of Maryland and 1.1% for the U.S.

Population densities have increased noticeably in both counties from 2000 to 2005. The year 2000 population densities were 377 people per square mile in Calvert County and 239 people per square mile in St. Mary's County. In comparison, the 2005 population density in Calvert County was 409 people per square mile and the population density in St. Mary's County was

267.4 people per square mile. Nationally, the average population density was 83.8 people per square mile in 2005 (USCB, 2005).

The age compositions of Calvert County and St. Mary's County are comparable to Maryland and the U.S. for persons under 5 years of age and for persons 18 years and over. However, both counties had somewhat smaller portions of people 65 years and older than found for Maryland and the U.S. The percentage of females in all four jurisdictions was similar. (USCB, 2005)

There were also similarities in the ethnic compositions of the two counties and the U.S. These three jurisdictions had comparable percentages of Caucasians and African-Americans. However, both counties had substantially fewer people of Hispanic/Latino origins. In comparison, the State of Maryland had substantially lower proportions of Caucasians and greater proportions of African-Americans than the two counties. The State also had more than twice as many persons of Hispanic/Latino origins than the two counties. (USCB, 2005)

In 2000, 52,433 workers, or 64.9% of the workers in the two-county area, were employed in either Calvert County or St. Mary's County (USCB, 2000b). The unemployment rate in the region remains well below state and national averages. The unemployment rate in May 2006 in Calvert County was 2.8%; in St. Mary's County the unemployment rate was 3.2%. In comparison, the May 2006 unemployment rate in the State of Maryland was 4.2%, in the MSA it was 3.8%, and nationally it was 4.6% (MDDLLR, 2006). The number of jobs in the two counties is increasing at a rate that is approximately three times the rate of job expansion in the State of Maryland as a whole (MDDLLR, 2006).

The Calvert Cliffs Nuclear Power Plant is the second largest employer in Calvert County, employing 833 people to operate CCNPP Units 1 and 2. The Patuxent River Naval Air Station is the largest employer in St. Mary's County. It is the headquarters of the Naval Air Systems Command, the Naval Warfare Center Aircraft Division, home of the U.S. Naval Test Pilot School, and is the base for the VC-6 Unmanned Aerial Vehicle Detachment (MDDBED, 2002). There are 10,500 civilian and ex-military employees and 9,300 contractors. Employment at the Patuxent River Naval Air Station in FY 2005 was 20,200 persons (SMCDEC, 2006). Eighty-three percent of the Patuxent River Naval Air Station employees lived in either St. Mary's County or Calvert County (MDDBED, 2002).

The median household income in Calvert County was \$71,488 in 2003, approximately 65% higher than the national average for that year of \$43,318. The 2003 median household income in St. Mary's County of \$58,651 was approximately 35% higher than the national average that year (USCB, 2005). Much of the relatively high median household income can be attributed to growth in the number of higher income households in both counties as the area continues to attract highly paid technical and professional personnel associated with the technology base industries.

~~Table 2.5-6~~ Table 2.5-5 (USCB, 2000c) presents the same demographic and economic information for several towns or communities within the two-county ROI that includes Calvert County and St. Mary's County, as described above.

2.5.1.1.3 10 mi (16 km) Emergency Evacuation Area

~~Figure 2.5-2~~ Figure 2.5-2 displays overlaying circles which mark 1, 2, 3, 4, 5, and 10 mi (2, 3, 5, 6, 8, and 16 km) distances from the CCNPP site. The area within a 10 mi (16 km) radius of the CCNPP site is predominately rural, dominated by farmland and forests, clusters of residential

communities, and by the waters of the Chesapeake Bay. Cities and recognizable unincorporated but named communities within a 10 mi (16 km) driving distance of the CCNPP site include California, Calvert Beach-Long Beach, Chesapeake Ranch Estates-Drum Point, Lusby, and Prince Frederick.

2.5.1.1.3.1 Overall Demographic and Economic Characteristics

As shown in ~~Table 2.5-6~~ Table 2.5-6 (USCB, 2000b), an estimated 40,745 people reside within a 10 mi (16 km) radius of the CCNPP site. The greatest concentrations of people appear to be located to the south of the CCNPP site.

Detailed information about the distribution of racial minority populations and low income populations within a 10 mi (16 km) radius of the site is discussed in Section 2.5.4.

2.5.1.1.3.2 Transient Population Levels

The term "transient" is used in this analysis to mean persons who live (are domiciled) outside the referenced area, but may be predictably expected to be in the area at some point. In this analysis, "transient population" includes:

- ◆ workers, also referred to as commuters, who live permanently outside of the area but who commute to a worksite within the two-county ROI (Calvert County and St. Mary's County) on a regular basis;
- ◆ persons who live outside the area but travel at least 50 mi (80 km) from their home to visit, shop, or tend to personal business or to conduct business within the region;
- ◆ tourists and visitors recreating in the area; and
- ◆ seasonal workers employed in the agriculture sector.

A "visitor" in this study is considered to be a transient when the following definition is met: the individual travels, at least 50 mi (80 km) each way, into the area for the day, and seeks overnight accommodations. Individuals who simply travel through the area from a point outside the area to a destination outside the area are not included in this definition.

SECPOP 2000, a code developed for the Nuclear Regulatory Commission by Sandia National Laboratories to calculate populations by emergency planning zone sectors (NRC, 2003), was used to develop projections of the resident and transient populations by sectors, within the 10 mi (16 km) radius around the CCNPP site. Population projections for the years 2010 through 2080 were projected by using years 1990 and 2000 U.S. census data (USCB, 2005, USCB, 2000c and USCB 2000a), updated with estimates from 2001, 2002, 2003, 2004, 2005 and 2006 (USCB, 2008) as the baseline data. Additional county census projection data was obtained for 2010, 2015, 2020, and 2030 for Delaware and Maryland (MSDC, 2008 and SD, 2008), and 2010, 2020, and 2030 for Virginia and the District of Columbia (USCB, 2008 and VDA, 2008). The population estimates were projected from 2040 to 2080 using linear and quadratic equations fit to population trend lines calculated from USCB and state generated county population projections (DEDO, 2000) (MDP, 2005) (VEC, 2006). This data and these growth rates were then used to develop the subsequent projections. The population distribution for each time period was computed in SECPOP 2000 by overlaying the 2000 census block point data (the smallest unit of census data) on the grid of this calculation package.

The Calvert Cliffs Units 1 and 2 Evacuation Time Estimate report was used to obtain the estimated transient population (CCNPP, 2002). This report is distributed to the State of

Maryland and the Calvert County, St. Mary's County, and Dorchester County Emergency Management Agencies.

Table 2.5-6 Table 2.5-6 presents population distributions, by residential population and transient population in 2000, within each of sixteen geographic directional sectors at radii of 0 to 1 mi (0 to 2 km), 1 to 2 mi (2 to 3 km), 2 to 3 mi (3 to 5 km), 3 to 4 mi (5 to 6 km), 4 to 5 mi (6 to 8 km), and 5 to 10 mi (8 to 16 km) from the CCNPP site.

Commuters

Table 2.5-7 Table 2.5-7 summarizes the commuting patterns to and from the ROI. The ROI experienced a net loss of 20,931 persons during the work week/work day/work hour period based on 2000 Census Bureau County-to-County Worker Flow survey data (USCB, 2000b). This out-commuting represents a significant change to the population base in the area of interest.

Visitors/Tourists

Recreational use is considered to be the primary contributor to the transient population in the area. The Southern Region of Maryland, a term designated by the Maryland Office of Tourism Development to include Calvert County, St. Mary's County, and Charles County, had 541,791 visitors in 2004 (MDDBED, 2005). Major parks within the 10 mi (16 km) radius include Calvert Cliffs State Park and Flag Ponds Park.

Calvert Cliffs State Park, in the immediate vicinity of the CCNPP site, covers 1,400 acres (567 hectares) with 1,079 acres (437 hectares) designated as a wild land area. The park features 1.3 mi (2.1 km) of shoreline beneath fossil-bearing, 15 million year old cliffs (MDDNR, 2005). The park also includes a camping area, Bay Breeze Youth Campground, which is used by organized groups such as the Girl Scouts for camping. Calvert Cliffs State Park had 17,113 day visitors from July 2005 to June 2006 (FY 2006) and 2,175 overnight visitors. The peak month for day users was October with 5,650 people and the peak month for overnight users was July with 875 people. The month with the most visitors of both types was October with 6,035.

Flag Ponds Park, which is operated by the Calvert County Natural Resources Division, is open seven days a week from Memorial Day to Labor Day and weekends after that. The park has hiking trails and picnicking and receives approximately 20,000 annual visitors, primarily during the three summer months.

Seasonal Workers in Agriculture

No farm in Calvert County or St. Mary's County employed seasonal, migrant workers in 2004. In addition, it is highly unlikely that seasonal agricultural migrant workers would be hired in the area in the future because the number of farms and the acres devoted to farming in the region has been declining as the land is increasingly converted to non-farm uses. (MDHRSA, 2000)

2.5.1.1.4 Low Population Zone

The LPZ is defined as a 2 mi (3.2 km) radius from the midpoint between the CCNPP Units 1 and 2 reactors. The 1.5 mi (2.4 km) radius from CCNPP Unit 3 is fully contained within this larger LPZ definition. Figure 2.5-3 shows both the CCNPP Unit 3 and the existing LPZ.

2.5.1.1.4.1 Overall Population Levels

As shown in **Table 2.5-8** Table 2.5-8 (CCNPP, 2002), 2,508 people resided in the LPZ in the year 2000. The communities of Lusby and Calvert Beach-Long Beach lie within the LPZ, as well as a portion of the Chesapeake Bay. Portions of Calvert Cliffs State Park and Bay Breeze Youth

Campground, along with the majority of Flag Ponds Park also fall within the LPZ. No nursing homes, hospitals, prisons, or major employers (other than CCNPP) are known to exist within the LPZ (CCNPP 2002). One school, the Southern Middle School at 9615 HG Trueman Road in Lusby, is located within the LPZ 1.9 mi (3.1 km) south of CCNPP Units 1 and 2. This school had a combined student and faculty population of 771 (CCNPP, 2002).

The demographics in the LPZ are most closely compared to the Calvert Beach-Long Beach Census Designated Place (CDP) as shown in ~~Table 2.5-5~~ Table 2.5-5. This is the closest CDP within the LPZ.

2.5.1.1.4.2 Transient Population Levels

There is considerable variation in peak daily and seasonal transient population levels within the LPZ. Winter daytime population with its one large school (771 students and staff) sees the highest population. Of course, this occupancy is minimal at night. Residents in the LPZ would have the highest population at night as many workers commute to points beyond the LPZ during the day. The LPZ population would be lowest in the summer, when school is not in session.

2.5.1.2 Demographic Projections

As described above for transient population estimates, SECPOP 2000 (NRC, 2003) was used to calculate population projections for the years 2010 through 2080, using 2000 U.S. Census data as the baseline data (DEDO, 2000) (MDP, 2005) (USCB, 2005) (VEC, 2006).

2.5.1.2.1 50 mi (80 km) Comparative Impact Area

~~Table 2.5-9~~ Table 2.5-9 presents the 2000 estimated population in concentric rings around the CCNPP site. ~~Table 2.5-9~~ Table 2.5-9 also displays the projected population within those rings from 2010 to 2080. CCNPP Unit 3 is estimated to start operation in 2015 and operate for 40 years until 2055. Population projections, in 10 year increments, have been provided through the year 2080. Populations for 2015, the proposed startup year, have also been provided.

Within the 50 mi (80 km) radius of the site, the average annual percent change for the 10 year periods range from 0.62% (for the years 2070 to 2080) to 1.28% (for the years 2000 to 2010). The average annual change in population between the years 2000 and 2080 is projected to be 0.87%, doubling the current population (an aggregate 100% increase over the 80 year period). Calvert County is currently the fastest growing of the 23 counties in the State of Maryland; St. Mary's County is the third fastest growing. Calvert County's population grew by an annual average of 4.0% from 2000 to 2004; St. Mary's County grew by an average annual of 2.5% during the same period. (NRC, 2003) (USCB, 2000c)

~~Table 2.5-10~~ Table 2.5-10 (NRC, 2003, USCB, 2005, USCB, 2000c, DEDO, 2000, MDP, 2005, VEC, 2000) presents residential population projections from the years 2000 through 2080 for each of the 16 geographic sectors to 50 mi (80 km) from the CCNPP site. Demographic characteristics for the residential population in the years beyond 2000 are assumed to reflect the ratios found in year 2000.

2.5.1.2.2 Two-County Region of Influence

Within the ROI, which is comparable to the 30 mi radius in ~~Table 2.5-9~~ Table 2.5-9, average annual population changes ranged from 6.4% for the 2070 to 2080 period to 13.6% for the 2000 to 2010 period. Population levels would increase from 315,592 in 2000 to 632,417 in

2080, an average annual increase of 0.87% (an aggregate of 100% increase over the 80 year period). (NRC, 2003) (USCB, 2000c).

2.5.1.2.3 10 mi (16 km) Emergency Evacuation Area

The population projections in ~~Table 2.5-9~~Table 2.5-8 reflect an upper limit of the estimated projected population at various points during the next several decades. Average annual population changes would range from 13.6% for the 2000 to the 2010 period to 6.3% for the 2070 to 2080 period. Population levels would increase from 40,745 in 2000 to 81,633 in 2080, an average annual increase of 0.87% (an aggregate of 100.4% increase over the 80 year period) (NRC, 2003) (USCB, 2000c).

2.5.1.2.4 Low Population Zone

The population within the LPZ, including years 2015 and 2055, the initial year of operation for CCNPP Units 3, and the year of license expiration are provided in ~~Table 2.5-8~~Table 2.5-8. Average annual population changes would range from 4.0% for the 2020 to the 2030 period to 28% for the 2000 to 2010 period. Population levels would increase from 2,508 in 2000 to 6,047 in 2080, an average annual increase of 1.8% (an aggregate of 141% increase over the 80 year period).

2.5.1.3 References

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2.5.2 Community Characteristics

A number of areas are used to define community characteristics for the two county ROI, Calvert County and St. Mary's County, Maryland. These characteristics include:

- ◆ the economy in the ROI,
- ◆ the political structure of the region,

- ◆ social structure information,
- ◆ the housing in the area,
- ◆ primary, secondary, and post secondary education in the region,
- ◆ recreation activities near the CCNPP site,
- ◆ tax structure in the region,
- ◆ land use in Calvert and St. Mary's Counties,
- ◆ community infrastructure and public services available to residents of the ROI including water, sewer, police, fire, emergency medical service, hospitals, and doctors,
- ◆ transportation in the two county area, and
- ◆ a profile of any distinctive communities in the ROI.

As described in Section 2.5.1, the region of influence (ROI) is limited to Calvert County and St. Mary's County. Calvert County is included because it is the county in which the proposed CCNPP Unit 3 will be located and significant portions (67%) of the existing CCNPP Units 1 and 2 maintenance and operations work forces live there (see ~~Table 2.5-11~~ ~~Table 2.5-11~~). St. Mary's County is also included in the ROI because significant portions (24%) of the CCNPP Units 1 and 2 maintenance and operations work forces also currently live there. A significant portion of the construction, maintenance, and operations work force for the proposed plant is also expected to live in Calvert County or St. Mary's County. The ROI is limited to these two counties because any stress to community infrastructure and services caused by changes in the work force as a result of the proposed plant would be expected to occur in these two counties. No other county or urbanized area's community services are expected to receive stress from the proposed plant. Information about the construction industry's labor force in the Washington DC Metropolitan Statistical Area (MSA) is included because portions of the construction and operations work force could be drawn from this area.

~~Figure 2.5-1~~ ~~2.5-1~~ and ~~2.5-2~~ ~~Table 2.5-2~~ are maps of the vicinity of the CCNPP site. The maps display basic geographical features such as rivers, roads, cities, and airports within a 50 mi (80 km) and 10 mi (16 km) radius of the plant and displays county boundaries.

Community characteristics of the general population in the ROI have been compared to data obtained on low income and racial minority populations in the ROI. The findings are presented in Section 2.5.4.

2.5.2.1 Area Economic Base

2.5.2.1.1 50-Mile (80 km) Geographic Area of Comparison

~~Table 2.5-12~~ ~~2.5-12~~ (MDDLLR, 2006a), displays data about the size of the total civilian labor force, the number of employed civilians, the number of unemployed civilians, and the rate of unemployment in October 2006 for the U.S., the state of Maryland, the Washington DC MSA, Calvert County, and St. Mary's County. The Washington DC MSA includes the District of Columbia and 5 counties in the state of Maryland, 12 counties and 5 cities in Virginia, and 2 counties in West Virginia. The Washington DC MSA had a total civilian labor force of 583,647 in October 2006, of which 22,689 (3.9%) were unemployed. In comparison, the state of Maryland had a civilian labor force of more than 3 million people with an unemployment rate of 3.7%

and the United States had a civilian labor force of somewhat less than 152 million with an unemployment rate of 4.4%. (MDDLLR, 2006a)

The Washington DC MSA could provide construction, operations, and maintenance workers for the proposed CCNPP Unit 3. ~~Table~~ ~~Table 2.5-13~~ 2.5-13 (BLS, 2005) presents data about the construction and extraction occupational labor force in the MSA, which includes Calvert County (St. Mary's County is part of the much smaller Lexington Park Maryland Micro Area). In May 2005, 108,860 people were employed in construction and extraction jobs in the MSA. These workers earned mean salaries of \$19.04 per hour and \$39,610 per year.

2.5.2.1.2 Two-County Region of Influence

Generally, the economy across the ROI can be viewed as being economically diverse, healthy, and stable. Employment in the professional and technical services, health care and social services, state and local government, and in the civilian branch of the federal government account for the 33,186 jobs or 39% of the employment in the ROI (MDDP, 2005). The relative high average salaries of workers in the ROI are directly attributable to the large number of positions in these industrial sectors.

The construction industry makes up a relatively small portion of total employment in the ROI, representing slightly more than 10% of employment in Calvert County and less than 5% in St. Mary's County (MDDLLR, 2006a). Within the three county areas called "Southern Maryland," construction labor is the seventeenth fastest growing occupation, and is expected to increase from 1,610 jobs in 2002 to 2,030 in 2012. Construction manager jobs are expected to increase in this area from 610 jobs in 2002 to 805 jobs by 2012. Construction equipment operator jobs in this area are expected to increase from 435 jobs in 2002 to 585 jobs in 2012 (MDDLLR, 2006b).

Employment in fishing, forestry, and agricultural services has witnessed a decline in the last two decades. Employment in the farming sector, alone, also has been in decline for the last twenty years as the region has experienced pressures from the rapid population growth.

2.5.2.1.3 Calvert County

Calvert County is a fast growing bedroom community of Washington D.C. and is part of that MSA. The principle economic centers within Calvert County are the towns of North Beach and Chesapeake Beach. The unincorporated but recognizable communities or "town centers" that serve as nuclei for residential, commercial, and light industrial activity and development include Calvert Beach-Long Beach, Chesapeake Ranch Estates-Drum Point, Dunkirk, Huntington, Lusby, Ownings, Prince Frederick, St. Leonard, and Solomons. The county seat is Prince Frederick.

As shown in ~~Table~~ ~~Table 2.5-12~~ 2.5-12 (MDDLLR, 2006a), Calvert County had a civilian labor force of 47,247 people in October 2006, of which 45,971 were employed and 1,276 (2.7%) were not employed. During the same month, the Washington DC MSA's unemployment rate was 3.9%, the state of Maryland's was 3.7%, and the national unemployment rate was 4.4% (all unemployment percentages are seasonally adjusted figures). Calvert County added 7,849 jobs from 2000 to 2005, thus experiencing a 19.9% aggregate growth in jobs in five years. (MDDLLR, 2006)

~~Table~~ ~~Table 2.5-14~~ 2.5-14 (MDDLLR, 2006a) presents total, governmental, and private sector employment data by industrial sector, within Calvert County, St. Mary's County and the ROI. A total of almost 21,000 people were employed in Calvert County in 2005 (see the table note

regarding this total), with almost 3,800 people employed in the governmental sector and over 17,000 people employed in the private sector. The largest governmental employment sector was the local government with over 3,400 employees, and the largest private sector employer was the trade, transportation, and utilities sector with more than 4,700 employees. (MDDLLR, 2006a)

Calvert County has 1,770 businesses, of which 15 businesses employ 100 or more workers each. As shown in ~~Table~~ Table 2.5-15 2.5-15 (MDDLLR, 2006a), major non-governmental employers in Calvert County in 2005 included Calvert Memorial Hospital with 915 employees, Constellation Energy with 833 employees (excluding contractors), ARC of Southern Maryland with 375 employees, Walmart with 310 employees, DynCorp with 296 employees, and Recorded Books with 291 employees (MDDLLR, 2006a).

The fastest growing private industries from 2004 to 2005 in Calvert County and St. Mary's County are presented in ~~Table~~ Table 2.5-16 2.5-17 and Table 2.5-17 (MDDLLR, 2006a). Within Calvert County, the credit intermediation sector was the fastest growing sector with a 32.3% increase. Other sectors experiencing more than 10% growth included merchant wholesalers of durable goods (17.4%), general merchandise stores (12.4%), and transit and ground passenger transportation (10.8%). (MDDLLR, 2006a)

2.5.2.1.4 St. Mary's County

Within St. Mary's County, the town of Leonardtown represents an economic hub. Unincorporated communities or town centers within the county include California, Charlotte Hall, Golden Beach, and Lexington Park. As shown in ~~Table~~ Table 2.5-12 2.5-12 (MDDLLR, 2006a), St. Mary's had a civilian labor force of 50,375 people in October 2006, of which 48,793 were employed and 1,582 (3.1%) were not employed. During the same month, the Washington DC MSA's unemployment rate was 3.9% (MDDLLR, 2006c), the state of Maryland's was 3.7%, and the national unemployment rate was 4.4% (all unemployment percentages are seasonally adjusted figures) (BLS, 2005) (USCB, 2006a). St. Mary's added 5,668 jobs from 2000 to 2005, thus experiencing a 12.3% growth in the number of jobs in the five year span.

As shown in ~~Table~~ Table 2.5-14 2.5-14 (MDDLLR, 2006a) a total of almost 37,600 people were employed in St. Mary's County in 2005 (see table note regarding this total), with more than 11,000 people employed in the governmental sector and almost 26,500 people employed in the private sector. The largest governmental employment sector was the federal government with almost 6,900 employees. Local governmental employment was similar to Calvert County. The largest private sector was the professional and business sector with more than 8,600 employees, followed by the trade, transportation, and utilities sector with almost 6,500 employees. (MDDLLR, 2006a)

St. Mary's County has over 1,830 businesses, of which 37 businesses employ 100 or more workers each. As shown in Table 2.5-16 (MDDLLR, 2006a), the largest employers in the county include Patuxent River Naval Air Station (NAS) with 10,500 employees in 2005, DynCorp/CSC with 1,500 employees, EMA with 1,000 employees, St. Mary's Hospital with 900 employees, and BAE Systems with 854 employees.

The Patuxent River NAS plays a significant role in the county's economy. This facility includes the U.S. Naval Air Systems Command, and the Naval Air Warfare Center Aircraft Division, and also provides employment for 200 defense contractors (MDDBED, 2006). In 2005, the Patuxent NAS directly employed about 3,000 military personnel and about 7,500 civilians. In addition, its supporting contractors employed about 9,400 workers. Major defense-related employers

supporting the Patuxent NAS included BAE Systems Lockheed Martin, Northrop Grumman, Titan Systems, Wye Laboratories, and Boeing.

In St. Mary's County, see ~~Table~~ Table 2.5-17-2.5-17 (MDDLLR, 2006a), three industrial sectors experienced similar growth from 2004 to 2005. The transit and ground passenger transportation sector experienced 11.7% growth, the miscellaneous store retailer sector experienced 11.6% growth, and the nursing and residential care facilities sector experienced 11.0% growth (MDDLLR, 2006a).

2.5.2.2 Area Political Structure

2.5.2.2.1 50-Mile (80 km) Comparative Geographic Area

The 50 mi (80 km) radius centered at the CCNPP site includes all or parts of 2 counties in Delaware, 14 counties in Maryland, 16 counties in Virginia, and the District of Columbia. Data gathering and planning agencies within the 50 mi (80 km) radius of the CCNPP site include the Maryland Department of Planning, the Delaware Economic Development Office, the Virginia Employment Commission, and the U.S. Census Bureau. Individual cities, towns, and counties within the 50 mi (80 km) radius, but outside of the ROI, are represented by their respective, previously mentioned state planning/economic departments because no impacts would be expected to occur to community services in these areas.

As described in Section 2.5.4.1, there are no federally recognized Native American tribes within the 50 mi (80 km) radius of the site, so no Native American tribes are represented in major planning functions within the area. However, the Piscataway-Conroy Confederacy, a non-recognized Indian Tribe, is located in La Plata in Douglas County, Maryland. (NAL, 2006)

2.5.2.2.2 Two-County Region of Influence

Calvert County is governed by a Board of County Commissioners. The board consists of five members elected county wide. Each of the three county districts must have at least one board member who is a resident of that district. Two other members serve at large. Officers of the Board include a President and Vice President who are elected by majority vote of the Board members. County departments include: Community Resources; Economic Development; Finance and Budget; General Services: Personnel; Planning and Zoning; Public Safety; Public Works; Technology Services and Transportation (CCCAFR, 2005).

The county of St. Mary's is governed by a Board of County Commissioners consisting of five members. Four of these members represent one district each. Districts are defined by election districts. For example, the first Commissioner District includes the 1st, 2nd, and 9th election district. The 2nd Commissioner District includes the 3rd and 6th election districts, and so forth. the Commission President is elected at large. St. Mary's County departments include the: Department of Aging; County Attorney; Economic and Community Development; Finance; Marcey Halfway House; Information Technology; Human Resources; Land use & Growth Management; Public Works and Transportation; Recreation and Parks; and, Public Safety (SMC, 2006).

Many of the towns in both Calvert and St. Mary's Counties such as Lusby and Solomons, the nearest population centers to the CCNPP site, are census designated places but have no political or tax structure independent of the County (LMP, 2006). This includes Prince Frederick, the Calvert County seat.

Incorporated towns include Leonardtown in St. Mary's County and North Beach, Calvert County. North Beach governance is based on a Town Council and Mayor. Its departments

include Administration, Public Works, Town Clerk, and Code Enforcement. Its tax structure is based on property at \$0.67 per hundred assessed value in addition to sewer and water fees (MD, 2007). Leonardtown governance is based on a Board of Commissioners. Town departments include Administration, Planning and Zoning, Board of Appeals and Water and Wastewater Treatment.

There are no federally recognized or non-recognized Native American tribes within the ROI, so no Native American tribes are represented in major planning functions within the area (NAL, 2006).

2.5.2.3 Area Social Structure

Calvert County and St. Mary's County comprise a relatively affluent area, offer water vistas and open lands, and lie within commuting distance of the Washington DC MSA. Two indicators of the affluence in an area are the median household income and the poverty levels. As shown in ~~Table~~ Table 2.5-18 2.5-18 (USCB, 2005), the 2005 median household income was \$84,388 in Calvert County, significantly greater than the \$61,592 median household income for the state of Maryland and the \$46,242 for the U.S. From 2000 to 2005, Calvert County's median household income grew at an average annual rate of 5.6%, noticeably faster than the 3.3% for the state of Maryland and the 2.0% average annual increase for the U.S. ~~Table~~ Table 2.5-19 2.5-19 (USCB, 2005) provides similar information about mean salaries in Calvert County and other jurisdictions for 2005. As shown in Table 2.5-18, Calvert County's 5.5% of individuals below the poverty level is much less than the 8.2% for the state of Maryland and the 13.2% for the U.S. (USCB, 2005)

The 2005 median household income was \$62,939 in St. Mary's County, negligibly greater than the \$61,592 median household income for the state of Maryland and significantly greater than the \$46,242 for the U.S. From 2000 to 2005, St. Mary's County's median household income grew at an average annual rate of 3.0%, slightly less than the 3.3% for the state of Maryland but noticeably greater than the 2.0% average annual increase for the U.S. St. Mary's County's 9.0% of individuals below the poverty level is slightly greater than the 8.2% for the state of Maryland and much less than the 13.2% for the U.S. (USCB, 2005).

The populations of Calvert County and St. Mary's County are aging, as represented by their rising median ages. In 2000, Calvert County had a median age of 36 years and St. Mary's County had a median age of 34 years. These medians were similar to the state median age of 36 years and the national median of 35 years (USCB, 2005).

2.5.2.4 Housing

~~Table~~ Table 2.5-20 2.5-20 (USCB, 2000c) presents information gathered by the U.S. Census Bureau about the residential and rental housing markets in Calvert County and St. Mary's County in 2000. The ROI had a total of 61,657 housing units in 2000. Of these units, 56,089 were occupied and 5,568 (9.0%) were unoccupied. Of the total number of occupied units in the ROI, 22.1% were occupied by renters. There were significantly more year-around units available than seasonal or occasional units, with 3,348 units available year-around and 2,220 units available seasonally. (USCB, 2000c)

Future housing needs will be determined by population growth, vacancy rates, and persons per household trends. As shown in ~~Table~~ Table 2.5-21 2.5-21 (MDDP, 2006), the number of single and multifamily residential building permits issued annually in the ROI increased from 1,435 permits in 2001 to 1,909 permits issued in 2004. However, in 2005 the number of

approved permits for construction decreased to 1,481, a decrease of 428 permits or 22.4% from 2004.

In addition to the single family housing units in the ROI, rental units include 33 apartment/townhouse complexes (see [Table 2.5-22, Apartments, 2007](#)), and 24 hotel, motels, and bed and breakfasts with 1,202 units (see [Table 2.5-23](#)) in the two-county ROI. Within the greater roughly 30 mi (48 km) radius, an additional 7 hotels and motels with 571 units are available in Charles County and Prince Georges County. Many of the apartment/townhouse complexes require a minimum of a 6 to 12 month lease. Hotels and motels are the most occupied (80% or more) during the summer season from about April through August, and Mondays through Wednesdays during the business week.

There are no Native American reservations nor any housing reserved for Native Americans in the ROI.

2.5.2.4.1 Calvert County

As shown in [Table 2.5-20](#) (USCB, 2000d), Calvert County had a total of 27,576 housing units in 2000, and a significantly larger proportion of single family units than the 2005 Maryland state average of 76% (MDDP, 2006). Of the total units, 25,447 were occupied and 2,129 (7.7%) were unoccupied. Of the total number of occupied units in Calvert County, 14.8% were occupied by renters. The unoccupied units were relatively equally comprised of units available year-around and those available only seasonally or occasionally, with 1,125 units available year-around and 1,004 units available seasonally. Of the available housing units in 2000, the vast majority of units had plumbing and kitchen facilities, with the exception of 146 units (USCB, 2000c).

Despite the apparent availability of housing in 2000, discussions with county agency representatives indicate that the current availability of new houses or rental houses might be much more limited than indicated by the census data.

As shown in [Table 2.5-21](#) (MDDP, 2006), the number of single and multifamily residential building permits issued annually in Calvert County decreased over four years, from 928 permits issued in 2002 to 488 permits issued in 2005. From 2004 to 2005 alone, the number of approved permits for construction decreased from 525 in 2004 to 488 in 2005, a decrease of 37 permits or 7.0%. No multi-family units were approved or built in either year.

Housing prices have significantly increased in Calvert County, nearly quadrupling in value over the past decade. The median value of an owner occupied unit in Calvert County in 2000 was \$169,200 (USCB, 2000c). From 2003 to 2004, prices for residential properties rose 13.7%, with 1,628 units sold at a median price of \$259,900 in 2004. In 2005, the median price of the 1,675 residential units sold in Calvert County was \$325,000, up by 25% from 2004. In 2006, the sale price of many four bedroom houses in the northern half of the county averaged \$800,000. (MLS, 2006).

In 2000, the gross median rent was \$837 per month in Calvert County (USCB, 2000c).

In addition to the single family housing units in the ROI, rental units include 5 apartment/townhouse complexes (see [Table 2.5-22, Apartments, 2007](#)), and 8 hotel, motels, and bed and breakfasts with 655 units (see [Table 2.5-23](#)) in Calvert County. Many of the apartment/townhouse complexes require a minimum of a 6 to 12 month lease. Hotels

and motels are the most occupied (80% or more) during the summer season from about April through August, and Mondays through Wednesdays during the business week.

2.5.2.4.2 St. Mary's County

As shown in ~~Table 2.5-20~~ ~~2.5-20~~ (USCB, 2000c) (USCB, 2006), St. Mary's County had a total of 34,081 housing units in 2000, and a significantly larger proportion of single family units than the 2005 Maryland state average of 76% (MDDP, 2006). Of the total units, 30,642 were occupied and 3,439 (10.1%) were unoccupied. Of the total number of occupied units in St. Mary's County, 28.2% were occupied by renters. There were almost twice as many year-around units available as seasonal or occasional units, with 2,223 units available year-around and 1,216 units available seasonally. Of the available housing units in 2000, the vast majority of units had plumbing and kitchen facilities, with the exception of 432 units (USCB, 2000c).

Despite the apparent availability of housing in 2000, discussions with county agency representatives indicate that the current availability of new houses or rental houses might be more limited than indicated by the census data. They stated that the housing market is not nearly as tight as it was 2 to 3 years ago when the vacancy rates may have been as low as 2% or 3%. Builders were offering a number of incentives to entice purchasing of single-family houses by new home buyers, and two new housing developments were in the process of being completed at the time of discussions with the agency representatives.

As shown in ~~Table 2.5-21~~ ~~2.5-21~~ (MDDP, 2006), the number of single and multifamily residential building permits issued annually in St. Mary's County increased from 2001 through 2004, from 549 permits issued in 2001 to 1,384 permits issued in 2004. This was followed by a decrease in the number of permits issued from 2004 to 2005. In 2004, there were 1,384 permits issued for construction, of which 1,096 or 79.2% were single family units. In 2005, St. Mary's County issued 993 permits for construction, of which 963 permits or 97.0% were for single family construction. The decrease of 391 approved permits in 2005 represents a drop of 28.3% from 2004. (MDDP, 2006).

The median value of an owner occupied unit in St. Mary's County in 2000 was \$150,000 (USCB, 2000c). From 2003 to 2004, prices for residential properties rose 26.3%, with 1,446 units sold at a median price of \$237,950 of 2004. In 2005, the median price of the 1,731 units sold in St. Mary's County was \$295,000, up 24% from the 2004. (MLS, 2006).

In St. Mary's County, the gross median rent was \$719 per month in 2000 (USCB, 2000c).

In addition to the single family housing units in the ROI, rental units include 28 apartment/townhouse complexes (see Table 2.5-22, Apartments, 2007), and 16 hotel, motels, and bed and breakfasts with 737 units (see ~~Table 2.5-23~~ ~~Table 2.5-23~~) in St. Mary's County. High occupancy periods are similar to those for Calvert County.

2.5.2.5 Local Educational System

This section describes the school district facilities and enrollment levels in the two counties comprising the ROI. The two school districts in the ROI have a total of 51 public schools with 33,983 students enrolled (see ~~Table 2.5-24~~ ~~Table 2.5-24~~; CCSD, 2007; SMCPs, 2007; and GS, 2007). There are also a total of 33 private schools in the ROI, with 3,814 students enrolled (see Table 2.5-25) (GS, 2007).

2.5.2.5.1 Calvert County Public and Private Schools

The Calvert County Public School System, which includes all of Calvert County, includes 4 high schools, 6 middle schools, 12 elementary schools, 1 school that teaches pre-kindergarten through 12th grade, 1 Career and Technology Center, 1 Alternative School, and 1 Special Education Center (see Table 2.5-24, which has only 4 students per FTE teacher) (CCSD, 2007 and GS, 2007). The Calvert County school system opened a new high school, Huntington High School, in fiscal year 2005 and is now constructing a new elementary school. The school system employed a total of 2,209 people in the 2003-2004 school year, of which 1,256 were teachers. Current student/teacher ratios range from 15 to 20 students per full-time equivalent (FTE) teacher (with the exception of the Calvert Country School) (CCSD, 2007).

In 2006, there were 17,431 students (GS, 2007) enrolled in Calvert County public schools (Pre-K to Grade 12), which reflects an aggregate 14.3% increase over a five year period (CCPS, 2005). The enrollment is expected to be 18,260 primary and secondary students in public schools in 2015, an aggregate increase of 4.8% (CCSD, 2007). Racial minorities make up approximately 15% of the student population. In comparison, schools in the state of Maryland are expected to experience an average increase of 1.8% in enrollment during the same period.

Approximately 13% of the student body receives free and reduced priced meals and approximately 18% are enrolled as Title 1 students. Approximately 18% of the students are in Special Education classes. A very small percent of the student body (0.7%) are classified as English as a second language (a Limited English proficient person, or LEP) persons (GS 2007).

The 2005-2006 fiscal year operating budget was \$163,596,308, an 8.5% increase over the 2004-2005 fiscal year operating budget (CCPS, 2005). The Calvert County Public School Master Plan states that the annual percentage increase in student enrollment generally declined from 2000 to 2005: from 3.46% in 2000 to 2.53% in 2001, 3.07% in 2002, 3.09% in 2003, 1.64% in 2004, and 0.12% in 2005 (GS 2007).

The school district reports that essentially all schools, and the classrooms within them, are operating at capacity. As additional facilities are needed, the school will add modular classroom units. Despite operating at facility capacity, the system has indicated that they are not in need of additional equipment for their classrooms, and the greatest needs that they are now addressing include ongoing growth in the special services portion of the educational system (i.e., special education and other specialized teaching programs).

In addition to the public school system, Calvert County has eight private schools with 1,051 students. Current student/teacher ratios range from 6 to 18 students per FTE teacher (see Table 2.5-25, GS, 2007).

2.5.2.5.2 St. Mary's County Public and Private Schools

The St. Mary's County Public School System has 3 high schools, 1 middle/high school, 4 middle schools, 16 elementary schools, and 1 career and technology center (see Table 2.5-24 Table 2.5-24, SMCPs, 2007, and GS, 2007). The district is now building a new elementary school, and feels that a new middle school and a high school would have to be built by about 2012. Current student/teacher ratios range from 11 to 21 students per FTE teacher (with the exception of the St. Mary's County Alternative Learning School, which has 5 students per FTE teacher) (CCSD, 2007).

There were 16,552 students enrolled in St. Mary's County public schools in 2006 (GS, 2007). These enrollment levels are reported to have been relatively stable over the past few years.

That number is expected to grow by 8.3%, to 17,930 students by 2015 (MDDE, 2006). The State of Maryland Agency for Public School Construction reported that St. Mary's County public elementary schools had a 98.6% utilization for the 2005-2006 school year, the middle schools had a 95.4% utilization rate, and the high schools had a utilization rate of 102.1% (MDDE, 2006). Because enrollments have been relatively stable, the school district is focusing its efforts on improving performance levels (i.e., test scores) of the students.

The St. Mary's County Public School System's FY 2006 budget was \$147,340,296. The St. Mary's County Public School district may experience a significant reduction in operating funds if a proposed initiative to reduce funds for Impact Aid to Local Educational Agencies (LEAs) with children associated with federal facilities but not living on the facilities is passed. The mid-Atlantic Naval District has approved plans to move all families currently living on the Patuxent Naval Air Station to off-base, contract-owned, and contractor-operated housing. If the initiative is passed, the district will lose all impact dollars when the Navy housing plan is completed (MDDE, 2006).

In addition to the public school system, St. Mary's County has 25 private schools with 2,763 students. Current student/teacher ratios range from 8 to 31 students per FTE teacher. (see Table 2.5-25 Table 2.5-25, GS, 2007)

2.5.2.5.3 Colleges and Higher Education

There are two colleges in the ROI, St. Mary's College of Maryland and The College of Southern Maryland. St. Mary's College of Maryland is located in St. Mary's City (which is not an incorporated city, town or a Census Designated Place [CDP]). It is a public, baccalaureate granting institution and had 1,908 students in the 2005-2006 school year. The College of Southern Maryland has campuses in eastern Leonardtown (St. Mary's County), western Prince Frederick (Calvert County), and in La Plata and Waldorf (Charles County). The College of Southern Maryland is a public institution awarding Associates degrees and Certificates/Diplomas. It had a student enrollment of 4,961 people in the 2005-2006 school year (CHE, 2006).

2.5.2.6 Area Recreational Opportunities

Many of the recreational opportunities available in Calvert County and St. Mary's County involve the Chesapeake Bay and the Patuxent River, or open green spaces. Chesapeake Bay area beaches provide opportunities to swim and fish from shore. Boat ramp/launch sites and marinas provide many private opportunities for power boating, sailing, fishing from boats, crabbing, canoeing, and kayaking. Charter services provide additional commercial fishing opportunities in the area. (CCMP, 2004)

Additional on-land recreational opportunities include biking, golf, and fossil hunting (CCMP, 2004). Utilization numbers and capacities for these types of venues are not recorded by the applicable agencies or departments because the utilization numbers are difficult to capture and not generally used in facilities planning activities.

2.5.2.6.1 Calvert County

The relative value of tourism to the state of Maryland is summarized by the Maryland Department of Labor (MDL, 2006). Between 2001 and 2004, the number of tourism related jobs increased from 215,073 to 230,537. The payroll value in those same years increased from \$3.5 billion to \$4.1 billion. The combined value encompassed various employment categories including scenic transportation, travel services, arts and sports, accommodations and food services. Of these, food services represented the largest value with payroll of \$2.3 billion in

2004. Southern Maryland which includes Calvert, Charles and St. Mary's county has 11,122 tourism related jobs in 2004, representing total wages of \$134.4 million.

The relative value of tourism in Calvert County has been summarized by the Maryland Department of Business and Economic Development (CCM, 2006). This report provides information on various economic parameters including labor force, employment, agriculture, income, tax base, education and tourism (pg. 16). Tourist expenditures in Calvert County during 2003, 2004, and 2005 were approximately \$59.5M, \$68.1M and \$74.9M, respectively. Expenditures within the recreational boating industry in those same years were \$38.7M, \$36.7M and \$33.8M. Tourism related county revenues derive from taxes on personnel income, admissions, amusements, hotels, restaurants and gasoline among others. Leisure and hospitality occupations accounted for 2,963 and 2,849 jobs in 2004 and 2005, respectively, representing approximately 17.4% of private employment. Average weekly wages in the leisure and hospitality sector during 2004 and 2005 were \$227 and \$252, respectively. In St. Mary's County, leisure and hospitality accounted for approximately 3,293 jobs in 2006 representing 8.6% of the total employment in that County.

Calvert County has approximately 360 acres (146 hectares) of county or municipal parkland. The County has ten county-operated parks with a variety of amenities. It also has 20 baseball fields, 6 football fields, 6 basketball courts, and 10 tennis courts (CCCAFR, 2005). Other area recreational opportunities include bird watching, lighthouses, an estuarine research center, boardwalks, a rail museum, and the Arthur Storer Planetarium. (CCMP, 2004) Calvert County has several public and private golf courses, including Chesapeake Hills in Lusby and Twin Shields in Dunkirk.

Major park facilities located within the county include Calvert Cliffs State Park located south of the CCNPP site and the Flag Ponds Nature Park (CCDED, 2007a). Calvert Cliffs State Park is comprised of about 3,030 acres (1,226 hectares) of land, of which about 90% is forested, and 1.3 mi (2 km) of shoreline on the Chesapeake Bay. Common recreational activities include wildlife viewing and bird watching, swimming, fishing, hunting, fossil hunting, hiking, picnicking, and use of the playground facilities. The park has 1,079 acres (432 hectares) of designated wildlands area. Hunting of upland game (e.g., squirrels and rabbits), turkey, and deer is allowed on 550 acres (223 hectares) of the park. The park also has 6 marked and maintained hiking trails covering 13 miles (20 km), a 1 acre (0.4 hectare) stocked fishing pond next to the parking lot, 6 youth camp sites available from March 30 through October 29, and parking spaces for more than 100 cars.

Flag Ponds Nature Park is comprised of 327 acres (132 hectares) and 1 mi (1.6 km) of shoreline on the Chesapeake Bay. Common recreational activities include wildlife viewing and bird watching, swimming, fishing, hiking, and picnicking. It has over 2 mi (3 km) of hiking trails and 2 freshwater ponds.

As shown in ~~Table 2.5-26~~ ~~Table 2.5-26~~ (DB, 2007 and CCDED, 2007b), Calvert County has four boat ramps/launch sites, two of them only provide access for canoes and kayaks. There are also 15 marinas in which to store, rent, or charter boats, with a total of 2,422 slips (see ~~Table 2.5-27~~ ~~Table 2.5-27~~, CC, 2007 and CCDED, 2007b). Numerous opportunities also exist to charter fishing and sightseeing boats within the county. As shown in ~~Table 2.5-28~~ ~~Table 2.5-28~~ (CCDED, 2007b), there are seven charter boat associations with more than 100 boats available to charter (individual boats/charters are not listed because of the extensive number of them in the county).

Two campgrounds, although each is a large facility, provide limited overall camping opportunities in the county (see Table 2.5-29 ~~Table 2.5-29~~, GC, 2007 and CCDED, 2007a). Breezy Point Beach & Campground has 60 camp spaces and Patuxent Camp Sites has 75 campsites. (GC, 2007 and CCDED, 2007a)

The Calvert County Comprehensive Plan and the Land and Recreation Plan recommend the creation of greenways throughout the county (MDDNR, 2006). Calvert County is also exploring opportunities to create water access points to the Chesapeake Bay. The Calvert County Comprehensive Plan calls for town centers to serve as focal points for community-based recreation and for development of a network of county-wide parks featuring unique natural, cultural, and historical sites (CCMP, 2004).

While Calvert County has existing recreational facilities available to residents and visitors, it also recognizes the need for facility expansion. The Calvert County Land Preservation, Parks and Recreation Plan Appendix E contains detailed information on recreation facility use (demand) in 2005, carrying capacity, unmet demand and therefore projected needs. The data show that the current County recreational facilities do not meet need. Needs due to population growth are projected out to the year 2020. The Plan establishes goals for meeting this demand. Included in the plan is a list of priority facility and estimated capital needs for each (CCMP, 2004).

2.5.2.6.2 St. Mary's County

St. Mary's County has 4 state parks, 12 community parks, 7 neighborhood parks, and 15 school recreational parks. St. Mary's County also maintains 3,983 acres (1,612 hectares) of resource lands, some of which are used for recreation and environmental education. St. Mary's County has 400 mi (640 km) of shoreline (MDDBED, 2007) and approximately 1,500 acres (610 hectares) of public county or municipal parkland. There are two 18-hole golf courses located in the county, including the Wicomico Shores Golf Course owned by St. Mary's County and the privately owned Breton Bay Golf and Country Club.

The four state park facilities located within the county include St. Mary's River State Park, Point Lookout State Park, St. Clements Island State Park, and Greenwell State Park. St. Mary's River State Park is located southwest of the CCNPP site and south of California. The park is comprised of 2,000 acres (810 hectares) of land, a 250 acre (101 hectares) fishing lake, and 9 miles (15 km) mountain biking and hiking trails (SMCD, 2007).

Point Lookout State Park has 143 wooded campsites (26 with full hook-ups and 27 with electricity), one campsite for youth groups, and the Civil War Museum/Nature Center. Water-based recreation facilities and activities include a beach area (with grills, picnic tables, a playground, showers, and restrooms) with lifeguard supervised swimming, a boat launch facility and fish-cleaning station, boat rentals and supplies available from the camp store, three fishing areas, and a 710 ft (216 m) pier (SMCD, 2007).

St. Clements Island State Park is a 40 acre (16 hectare) island with hiking, picnicking, scenic views of the Potomac River, a museum highlighting island history, and pier and docking facilities. A seasonal water taxi provides access only during the weekends from May through September (SMCD, 2007).

Greenwell State Park is comprised of 600 acres (243 hectares) of land with 10 miles (16 km) of trails, 2 miles (3.2 km) of waterfront along the Patuxent River, a 50 ft (80 m) pier, kayak/canoe launch sites, beach and picnicking areas, a pavilion, Knott Lodge (an overnight facility for up to

16 guests), and historic Rosedale Manor. Horseback riding programs, summer camps and special events are additional recreational opportunities available at the park (SMCD, 2007).

As shown in ~~Table 2.5-26~~ ~~Table 2.5-26~~ (DB, 2007 and SMCDT, 2007), St. Mary's County has 18 boat ramps/launch sites, two of them only provide access for canoes and kayaks and another five only have piers. There are also 21 marinas in which to store, rent, or charter boats (see ~~Table 2.5-27~~ ~~Table 2.5-27~~, SMCTT, 2007 and SMCDT, 2007). Numerous opportunities also exist to charter fishing and sightseeing boats within the county. As shown in ~~Table 2.5-28~~ ~~Table 2.5-28~~ (SMCDT, 2007), there are an estimated 35 charter boat services in the county.

Significantly more camping facilities and opportunities are available in St. Mary's County than Calvert County. The county has six campgrounds/RV parks with a total of over 630 spaces (see ~~Table 2.5-29~~ ~~Table 2.5-29~~, GC, 2007 and SMCDT, 2007).

St. Mary's County abounds in sites and structures of historic interest; 27 are listed on the National Register of Historic Places and 666 on the Maryland Inventory of Historic Sites (SMCMP, 2003). Calvert County and St. Mary's County are part of a three county "Southern Maryland Heritage Area." Over 63 sites and activities in St. Mary's County are identified in the Heritage Plan as historic, cultural, or recreational centers. The most important fixed visitor destinations are Point Lookout State Park, Historic St. Mary's City, and the Sotterley Mansion. The air exposition at the Naval Air Station each spring, the Blessing of the Fleet, the Crab Festival, and the Oyster Festival each fall, attracts large numbers of people (SMCMP, 2003).

The St. Mary's Comprehensive Plan and the Land Preservation and Recreation Plan recommend the creation of greenways throughout the county (SM, 2003). St. Mary's County practices managed growth and land preservation via tools such as the Comprehensive Zoning Ordinance and the Adequate Public Facilities guidelines. Within St. Mary County, 230,799 acres (93,404 hectares) or 79.1%, are devoted to agriculture, forests, extraction/barren, or wetlands (SMC, 2005).

2.5.2.7 Region Tax Structure and Distribution

2.5.2.7.1 State of Maryland

Statewide and county administrative and taxing organizations that may be directly affected by the proposed action include the state of Maryland, Calvert County, and St. Mary's County. The Maryland Department of Natural Resources evaluated the tax revenue generation impacts of power plants in the state (MDNR, 2006). The department found that power plants are required to pay property taxes like all other businesses in Maryland and are subjected to two tax rates, a state utility property tax and a county utility property tax (covering real and personal property). Non-utility generators are subject to three tax rates, state real property taxes, county real property taxes, and county personal property taxes. Real property refers to the land and buildings at a site, whereas personal property refers to equipment and components used at a site. Tax assessments are allocated to the jurisdictions where the generation facility is located using a cost-based estimate of value, to which the county tax rates are applied. Power plants receive a 50 percent exemption for personal property (i.e., machinery or equipment) that is used to generate electricity for sale, and all personal property is subjected to a minimum assessment of 25 percent of the original cost (MDNR, 2006).

In 2006, the Maryland sales and use tax rate was 5 percent on all taxable sales, other than certain vehicle rentals and sales of mobile homes. Most sales of food by substantial grocery or market businesses are not subjected to the sales tax. Other exemptions included medicine,

energy for residential use, manufacturing machinery and equipment, and certain agricultural equipment and supplies (MD, 2007).

Maryland has the Maryland Agricultural Land Preservation Program, which provides tax credits for preserved farm land (CCMP, 2004).

2.5.2.7.2 Calvert County

Calvert County is the main beneficiary of the CCNPP tax base, including county property taxes, county income taxes, and portions of the state sales tax revenues. Taxing districts that may be directly affected by the proposed action include Calvert County and the Calvert County Public School System. As shown in Table 2.5-30, the Calvert County effective property tax rate is 3.1220% per \$100 of property valuation, comprised of a real property tax rate of 0.8920%, a personal property tax rate of 2.2300%, and a utility property tax rate of 22.300%. (MDNR, 2006, MD, 2007) The CCNPP site had a Calvert County assessed property value of over \$675 million in fiscal year 2005. In addition, county residents in general and those working for CCNPP specifically pay personal and real property taxes to the county for their residences.

Calvert County had a 2.80 percent income tax rate in 2006 and also receives a portion of the Maryland state sales and use tax rate of 5 percent. The high tech nature of the jobs at CCNPP results in relatively high salaries to workers, which in turn leads to higher than average disposable income. This income is available for purchases of goods and services, which in turn create jobs and generate sales tax and other user fee revenues for the county and for the state. However, many other ROI area workers (other than CCNPP employees) commute to worksites and employers outside of the county and the ROI. These daily commutes represent an out-migration of potential sales and use tax revenues as residents make some purchases (e.g., gasoline and meals for example) in counties other than those in which the worker resides. (SMCMP, 2003)

Table 2.5-31 (CCBCC, 2005) presents information about the actual general revenues, taxes, and expenditures for Calvert County for FY 2005. Total revenues were about \$174.1 million, with 45.3% (\$78.8) obtained from property taxes, 31.2% (\$54.4) obtained from income taxes, 8.3% (\$14.5 million) obtained from other local taxes, and the remainder originating from other sources. Total expenditures were about \$166.2 million, including \$83.6 million for county operations, \$80.9 million for the Board of Education, and \$1.7 million for transfers out to other organizations. The greatest expenditures within the operating portion of the budget are allocated to the sheriff and corrections (14.4% and \$12.0 million), pensions and insurance (12.4% and \$10.4 million), debt and other miscellaneous expenses (12.2% and \$10.2 million), capital projects (10.5% and \$8 million), and public works and transportation (9.1% and \$7.6 million).

Table 2.5-32 (CCBCC, 2005) presents information about historical total revenues, property tax revenues, and the total assessed value of property in Calvert County from FY 2000 through 2005.

2.5.2.7.3 St. Mary's County

St. Mary's County had a 0.872 percent property tax rate in 2006 and a 3.00 percent income tax rate. Table 2.5-31 (SMCBCC, 2006) presents information about the actual general revenues, taxes, and expenditures for St. Mary's County for FY 2005. Total revenues were about \$145.2 million, with 40.2% (\$58.3) obtained from property taxes, 37.3% (\$54.1) obtained from income taxes, 9.2% (\$13.4 million) obtained from other local taxes, and the remainder originating from other sources. Total expenditures were about \$131.1 million, including \$70.8 million for

county operations, \$58.9 million for the Board of Education, and \$1.4 million for transfers out to other organizations. The greatest expenditures within the operating portion of the budget are allocated to the sheriff and corrections (25.1% and \$17.8 million), public works and transportation (19.2% and \$13.6 million), and debt and other miscellaneous expenses (17.1% and \$12.1).

2.5.2.8 Local Land Use Plans

The State of Maryland Legislature has mandated that each county and municipality adopt a comprehensive land use plan, per the Economic Growth, Resource Protection, and Planning Act, including Smart Growth initiatives. In compliance with this mandate, Calvert County and St. Mary's County have adopted land use plans that guide development within their respective counties.

The Maryland Master Facilities Plan for schools (MDDE, 2006) coupled with the land use plans effectively limit the development of new housing, which would strain community services without the construction of accompanying new infrastructure. Development is allowed, but the developer, rather than the county taxpayer, bears the costs.

2.5.2.8.1 Calvert County

Calvert County has a total area of 345 sq miles (894 sq km); 215 sq miles (557 sq km) of land and 130 sq miles (337 sq km) or 37.7% of water. St. Mary's County borders Calvert County to the south, the Chesapeake Bay is to the east, and Anne Arundel County is to the north.

The Calvert County Comprehensive Plan (as amended), adopted in 2004 (CCMP 2006) strongly encourages residential and light industrial growth in corridors where adequate infrastructure is in place. In addition, the County has adopted a plan to charge developers whose activities generate additional demands on the existing infrastructure. The County has established a waiting list for commercial land developers desirous of constructing new residential subdivisions (of greater than five lots).

2.5.2.8.2 St. Mary's County

St. Mary's County is 611 sq mi (1,582 sq km), of which 284 sq miles (736 sq km), or 46.5% is water. The county is bordered by the Patuxent River, the Chesapeake Bay, the Potomac River, and the Wicomico River. (SMCMP, 2003).

St. Mary's County has a comprehensive land use plan (SM, 2003) that addresses current and future land use issues, water supply, traffic congestion, sewerage, and solid waste management. The mission of the plan is to "preserve the county's environment, heritage, and rural character ..." (SM, 2003). The plan calls for clustered growth by directing the majority of new high-density residential and non-residential development to designated development districts and existing population centers. The plan calls for public facilities and infrastructure to be made available in these areas, as a way to control where growth is to occur. The citizens of St. Mary's County are concerned about the loss of economic vitality of some of the town centers, particularly Leonardtown (SM, 2003).

2.5.2.9 Area Public Facilities and Social Services

Public services consist of schools and colleges or universities; social services; water and sewer services; police protection, fire suppression, and emergency medical service (public safety); and hospitals and doctors. In both counties, most of these services are located near economic centers.

Schools and post-secondary education are discussed in Section 2.5.2.5.

2.5.2.9.1 Social Services

The Calvert County Department of Health and Human Services provides for and/or coordinates social and other services for the county. Under its guidance are the Department of Social Services, Aging Services, Calvert Alliance Against Substance Abuse, Substance Abuse program, Calvert County Health Department, Calvert County Memorial Hospital, Calvert Hospice, Calvert County Family Network, the Southern Maryland Chapter of the Red Cross, the Department of Community Resources, and the Maryland Cooperation Extension office (CCMP, 2006).

The St Mary's County Department of Social Services provides for and/or coordinates social and other services for the county, along with the St. Mary's County Public Health Department. Social service programs include Emergency Food Providers, Family to Family Foster Care in Southern Maryland, the Director of Emergency & Transitional Housing Programs, and the Child Care Administration Regional Office for St. Mary's County (SM, 2003).

2.5.2.9.2 Water and Sewer Services

2.5.2.9.2.1 Calvert County

Table 2.5-33 lists the public water districts/systems in Calvert County (CCWS, 2007). Calvert County had 22 water treatment plants and 14 storage tanks serving 9,400 accounts and provided 459,385,053 gal (1.7 million cubic meters) of treated water in FY 2005 (CCCAFR, 2005). As can be seen in Table 2.5-33, the water districts have more than enough excess capacity to accept more hookups, ranging from a low of 4.7% utilization of the Summit/Highlands Water district's water treatment and delivery capacity to a high of 86.6% for the Chesapeake Beach System. Residents who are not provided service by a public water district/system use private wells as sources of water and rely upon the area groundwater aquifers. Calvert County is served by seven aquifers: Patapsco, Aquia, Piney Point-Nanjemoy, Magothy, Brandywine, Choptank-St. Mary's, and the Brightseat. Ground water resources have been and are expected to remain adequate to meet the needs of a growing population in Calvert County, according to the comprehensive water and sewage plan (CCMP, 2004).

Table 2.5-34 lists the public sewer districts/systems in Calvert County (CCWS, 2007). Calvert County has 8 sewage treatment plants and 27 sewer pumping stations serving 9,835 accounts and providing 555,799,835 gal (2.1 million cubic meters) of treated sewerage in FY 2005 (CCCAFR, 2005). As can be seen in Table 2.5-34, the sewer districts have more than enough excess capacity to accept more hookups, ranging from a low of 18% utilization of the Calvert Cliffs Nuclear Power Plant Sewer district's water treatment and delivery capacity to a high of 57.1% for the Solomons Water and Sewer district. Residents who are not serviced by a public sewer district/system rely upon private septic tanks and drain fields for wastewater treatment.

2.5.2.9.2.2 St. Mary's County

St. Mary's water and sewer services are provided by the St. Mary's County Metropolitan Commission (SMCMC), created in 1957 by the State Legislature as a quasi-governmental, non-profit agency to supply water and sewer services to St. Mary's County. Table 2.5-33 lists the individual water systems in St. Mary's County (SMCMC, 2007). The Commission operates 27 water systems with 12.5 mgd pumping capacity (47.3 mld) and a 5.4 mgd (20.4 mld) average daily flow. The systems serve 13,808 accounts from 72 wells and 54 pumping stations (SMCMC, 2006). As can be seen in Table 2.5-33, the water districts have more than enough excess capacity to accept more hookups, ranging from a low of 4.2%

utilization of the Wicomico Shores water Shores water treatment and delivery capacity to a high of 55.1% for the Piney Point system. Residents who are not provided service by the SMCMC water system use private wells as sources of water and rely upon the area groundwater aquifers. St. Mary's County is served by six aquifers: the Upper Patapsco, Lower Patapsco, Aquia, Piney Point-Nanjemony, Magothy, and Pauxtent. Only the Aquia aquifer serves the entire county, the remaining aquifers are found in limited areas within the county (CCMP, 2004). Ground water resources have been and are expected to remain adequate to meet the needs of a growing population, according to the comprehensive water and sewage plan (CCMP, 2004).

Table 2.5-34 lists the SMCMC's individual sewer systems in St. Mary's County (SMCMC, 2007). The four wastewater treatment plants in the county are Forest Farm, Marlay-Taylor, St. Clement's Shores and Wicomico Shores (CCMP, 2004). These four treatment systems have 53 waste water pumping stations with a capacity of 6.3 mgd (23.8 mld) and an average daily flow of 5.0 mgd (19.0 mld), serving approximately 16,836 accounts (SMCMC, 2006). As can be seen in Table 2.5-34, the individual public sewer systems are operating closer to their capacities than the Calvert County systems. System utilization ranges from a low of 64.0% for the Marlay-Taylor system to a high of 97% for the Wicomico Shores system. Residents who are not serviced by one of public sewer systems rely upon private septic tanks and drain fields for wastewater treatment.

2.5.2.9.3 Police and Sheriff Services

The two-county ROI receives law enforcement services from the State of Maryland Department of State Police, the Calvert County Sheriff's Office, and the St. Mary's County Sheriff's Department.

2.5.2.9.3.1 Calvert County

Calvert County has 1 police station, 135 uniformed officers, 25 civilian personnel, and 135 police vehicles. The department has three, 9.5 hour shifts that patrol officers work. Additional law enforcement resources are available from the City of Baltimore at the request of the Sheriff's Department as are the resources of the Sheriff Department in St. Mary's County (CCCAFR, 2005). Table 2.5-35 (CCBCC, 2005) (MDSP, 2007) summarizes the staff levels and budgets for law enforcement departments and detention facilities for the state of Maryland, Calvert County, and St. Mary's County. In FY 2005, the Calvert County Sheriff's Office had a budget of \$6.9 million. The county's detention facility had a budget of \$4.5 million, 64.5 FTE staff, and had an average daily population of 222 inmates (CCBCC, 2005). The facility has a capacity of 750 inmates and reaches capacity during the summer months, with winter populations being lower. The department has identified the need for additional funding to support the addition of more staff, more office space, increased detention facility capacities, and additional equipment.

The CCNPP site maintains its own security within the site property boundaries and will request assistance from police and sheriff departments, as needed, in accordance with the emergency and security plan.

2.5.2.9.3.2 St. Mary's County

The St. Mary's County Sheriff Department, is one of the oldest in the nation. It has 117 authorized law enforcement officers (SMC, 2005). The St. Mary's Department of Public Safety reported 11,632 calls for service in 2005, a modest drop of 2.4% from the 11,910 calls in 2004 (SMDPS, 2005). As shown in Table 2.5-35 (SMC, 2006) St. Mary's County Sheriff's Department had a FY2005 budget of \$11.8 million. The county's detention facility had a

budget of \$6.0 million and it had an average daily population of 292 inmates. The department has identified the need for additional funding to support the addition of more staff.

2.5.2.9.4 Fire Suppression Services

2.5.2.9.4.1 Calvert County

Calvert County has 7 fire stations and 870 volunteer firefighters (CCCAFR, 2005). The Southern Maryland Volunteer Fireman's Association lists 7 volunteer fire departments in Calvert County, 6 volunteer rescue squads, and 1 dive rescue team (SMVFA, 2004). The number of stations and an indication of the general distribution of volunteers (see the note in the table regarding the total number of staff) are provided in Table 2.5-36 (FD, 2007 and CCDFB, 2005). The department has 12 engines/attack pumpers, 3 ladder trucks, 5 tankers, and a wide assortment of other vehicles. The engines/attack pumpers carry 750 to 1,000 gals of water each and are typically about 15 years old. Most tankers can carry about 3,000 gals of water each. The department has identified a current need for more support personnel for fire and rescue services, and additional staff in the Emergency Management and the Public Safety Director's Office. The county also has identified a current need for additional vehicles and equipment.

Fire prevention and response on the CCNPP site is handled by an onsite force with backup resources available from both Fire Departments in Calvert County and St. Mary's County. The CCNPP onsite force maintains an emergency response team, including a fire brigade, to respond to fires within the facilities' buildings and structures.

2.5.2.9.4.2 St. Mary's County

The Southern Maryland Volunteer Fireman's Association identifies 9 volunteer fire departments in St. Mary's County and 7 volunteer rescue squads (SMVFA, 2004). These departments were staffed by more than 730 volunteer firefighters and 150 other support staff (FD, 2007).

2.5.2.9.5 Emergency Medical Services

Calvert County and St. Mary's County are part of Region V of the Maryland Emergency Medical Services (EMS) System. In most cases their EMS services are provided from the same stations and by most of the same volunteers that staff the fire stations. The Maryland State Police provide MEDVAC services to both counties in emergency evacuation situations.

The 2005-2006 Maryland Institute for Emergency Medical Services Systems Annual Reports noted that Region V made bioterrorism and weapons of mass destruction planning a major focal point of effort (MIEMSS, 2006).

2.5.2.9.5.1 Calvert County

In Calvert County certified EMS volunteers provide rescue and emergency services throughout the county. The fire/EMS services have 500 volunteer emergency medical technicians (EMTs) that provide services throughout the county. Calls for assistance are received by a central dispatch system and units are dispatched by that system. Table 2.5-37 (MIEMSS, 2006) presents information about EMS responses to calls for FY 2005. Calvert County responded to 132 EMS events that involved 175 patients.

The Calvert County Sheriff has the ability to draw upon surrounding counties and metropolitan areas to assist his staff in the event there was a simultaneous emergency event at CCNPP, as well as offsite evacuations near the plant.

2.5.2.9.5.2 St. Mary's County

As with Calvert County, St. Mary's County also has certified EMS volunteers that provide rescue and emergency services throughout the county. Calls for assistance also are received by a central dispatch system and units are dispatched by that system. As shown in Table 2.5-37 ~~Table 2.5-37~~, in FY 2005 St. Mary's County responded to 147 EMS events that involved 119 patients.

2.5.2.9.6 Hospitals and Doctors

50-Mi (80 km) Comparative Geographic Area

In 2003, the U.S. Census Bureau determined that the Washington DC MSA had 22,334 doctors, or 440 physicians for every 100,000 persons. There also were 39 community hospitals with 9,342 beds, or 184 beds for every 100,000 persons in the MSA (USCB, 2006).

There are two hospitals in the ROI: Calvert Memorial Hospital in Prince Frederick and St. Mary's Hospital in Leonardtown. These facilities and other medical services are described below.

2.5.2.9.6.1 Calvert County

Calvert Memorial Hospital (CMH) is a nongovernmental, general medical and surgical, not-for-profit hospital with Joint Commission on Accreditation of Healthcare Organizations (JCAHO) accreditation. (AHA, 2006). The facility has 120 licensed beds, has a 138 bed capacity (they are not currently using all available spaces), and has a surge capacity of 157 beds in the cases of large-scale emergencies. There were 8,201 admissions in 2006 (AHA, 2006) and now have an average of 76 beds used each day.

The emergency department of CMH has 19 emergency beds and 5 fast-track (i.e., minor injuries/illness) beds, and sees about 100 patients each day (MIEMSS, 2006). The surge capacity of the emergency department is 38 emergency beds and 10 fast-track beds. CMH also has a 10-bed intensive care unit that can be surged to 20 beds in an emergency. Finally, in the event of a large-scale emergency, CMH could also use 16 beds in the Same Day Surgery area, 6 treatment chairs in the Infusion Therapy Center, 5 beds in the Outpatient Department, and 4 beds in the Pain Management Center.

The hospital currently has a decontamination area capable of treating 10 patients per hour. It also has a portable decontamination unit onsite that can handle 50 patients per hour. The hospital has 1,065 employees and 289 members of the medical staff. The employees include 38 administrators, 341 nurses, 141 professionals, 184 technical staff, 184 clerical staff, and 177 service staff. The medical staff includes 157 active medical staff, 73 consulting physicians, 2 honorary physicians, 30 allied health professionals, and 27 telemedicine physicians.

The hospital will complete a \$33 million expansion in fall 2007 that includes a new 35-bed emergency department, 10-bed intensive care unit, an expanded laboratory, 16 additional monitored beds, and a new outpatient concourse. The expansion will also include a new 3-stage internal decontamination center capable of treating 50 patients per hour, increasing the total decontamination capabilities to 110 patients per hour from all of the permanent and portable decontamination facilities.

In the summer of 2007, CMH will also begin construction of a 75,000 sf medical office building, to be located adjacent to the hospital. This expansion will provide additional physicians' offices, physical therapy, and expanded outpatient imaging services. Construction of this

facility is to be completed by fall 2008. Both expansion projects are anticipated to meet the short and intermediate future needs of the hospital.

In addition to the primary facilities in Prince Frederick, CMH also has an urgent care center in Dunkirk, another one in Solomons, and a community health center in North Beach that provide primary care services. Each of these facilities has excess capacity that can be drawn upon when needed.

CMH has a formally established memorandum of understanding (MOU) with St. Mary's Hospital in Leonardtown and Civista Medical Center in La Plata (Charles County) to facilitate the transfer of personnel, equipment, and supplies between the three facilities in the event of an emergency. In addition, CMH and St. Mary's Hospital have identical internal disaster management plans to facilitate their staff's ability to work at each other's facilities, if needed. CMH also has formal MOUs with area tertiary care centers to facilitate the transfer of patients. These tertiary care centers include Washington Hospital Center, University of Maryland, Georgetown University Medical Center, Prince Georges Hospital Center and Washington Adventist Hospital, and Johns Hopkins. CMH also participates in the Maryland Incident Management System (MIMS) and is FEMA certified for a nuclear response.

In the event that an emergency should occur, or that the hospital has to be evacuated, the on-call CMH administrator would coordinate the efforts, in conjunction with the CMH Disaster Management Council. CMH has a comprehensive All Hazards Response Plan that addresses the responsibilities and procedures for such responses, and the facility conducts drills twice a year. CMH is also part of the Maryland Statewide Evacuation Plan and would conduct an evacuation in conjunction with the Maryland Emergency Management Agency. The Maryland state plan stipulates that patients are to be evacuated, by zones, to the 51 hospitals in the state. In the event of an evacuation, ambulatory patients would be transported by bus and other patients would be transported by private/voluntary ambulance services or via air support provided by the Maryland Department of State Police's, Park Service's, and Coast Guard's medivac/rescue helicopters.

Calvert County, in general, also has 156 physicians practicing in 39 specialties throughout the county (AHA, 2006). Calvert County also had 4 Nursing and Personal Care facilities with 481 employees in 2000 (USCB, 2000e).

2.5.2.9.6.2 St. Mary's County

St. Mary's Hospital had 108 beds in 2007. The number of workers was 1,090 with 252 medical staff. Patient admissions in 2007 totaled 9,254. Emergency care visits totaled 43,222 and outpatient visits totaled 48,040. The average daily census was 76.7 patients (SMH, 2007).

The St. Mary's Hospital emergency acute care facility is open 24 hours a day, seven days a week. Helicopter transport is available to transfer critical patients to other facilities as needed. An advanced MRI/CT technology room is under construction adjacent to the emergency room along with a room to include radiography capability. An Express Care facility is located in Charlotte Hall to treat minor injuries and illnesses.

Partner facilities supporting St. Mary's Hospital under the umbrella of the Chesapeake Potomac Healthcare Alliance include the Chesapeake Potomac Home Health Agency and the Chesapeake Potomac Regional Cancer Center. Therapies of the Cancer Center include external beam radiation, advanced CT simulation, 3-D treatment planning and radiation therapy (SMH 2006;2007).

In Maryland Emergency Response Region 5, which includes Montgomery, Prince George's, Charles, Calvert, and St. Mary's Counties, there were over 8,800 emergency providers of differing qualifications and over 220 emergency vehicles equipped to transport and/or treat patients, about 20% of the state's transport capacity. During June 2006 to May 2007, Calvert County reported a total of 135 scene oriented emergency cases or about 0.7% of the state's total (17,686). St. Mary's County reported a total of 166 cases or 0.9% of the state's total (MIEMSS, 2008)

St. Mary's County also has 135 physicians practicing in 35 specialties throughout the county (AHA, 2006). St. Mary's County also had 3 Nursing and Personal Care facilities with 473 employees in 2000 (USCB, 2000e).

2.5.2.10 Transportation

2.5.2.10.1 Airports

50-mi (80 km) Comparative Geographic Area

There are three major airports in the Baltimore-Washington area including the Baltimore/Washington International Thurgood Marshall Airport (BWI), Reagan National Airport (DCA), and Washington Dulles International Airport (IAD) (MDDBED, 2007).

Two-County Region of Influence

There are no commercial airports within the ROI. However, the Chesapeake Ranch Airpark is a private airport located 6 mi (10 km) southeast of the CCNPP site. There are no aircraft permanently based here. A busy summer weekend would result in approximately six privately-owned and operated airplanes using the field.

There is also a helipad on the CCNPP site that is used for corporate flights and Medivac flights, if needed.

The St. Mary's County Airport (Captain Duke Airport), located 10 mi (16 km) southwest of the CCNPP site and 4 mi (6 km) northeast of Leonardtown, has approximately 100 single engine planes based at the facility. The Maryland State Police have a rescue helicopter based at the St. Mary's County Airport. The single runway is 4,150 ft x 75 ft (1,265 m x 23 m) (SMDPW, 2006). The airport is currently only available for private planes. However, the St. Mary's Transportation Master Plan Update suggests determining what additional infrastructure would be needed at the airport to ready it for future commuter air service (SMDPW, 2006) (SMDPW, 2007) (MDDBED, 2007).

The Patuxent River Naval Air Station, in St. Mary's County, is 11 mi (18 km) south of the CCNPP site. Patuxent River Naval Air Station operates naval aircraft in test and development missions.

2.5.2.10.2 Public Transportation (Bus)

50-Mi (80 km) Comparative Geographic Area

A commuter bus service is operated by Calvert County as an alternative mode of transportation for those individuals living in the county, but working in the Washington D.C. area (MDDBED, 2007).

St. Mary's County provides daily mass transit services to the Washington D.C. area for commuters. The commuter service to the Washington D.C. area is well utilized and ridership has been increasing over the years (SMCMP, 2003).

Two-County Region of Influence

Calvert County has 17 passenger buses on 7 service routes that cover 475,635 mi (765,297 km). There were approximately 113,354 passengers for FY 2005 (CCCAFR, 2005). Calvert County's Public Transportation Division operates a deviated fixed route system and a demand route system to meet the transportation needs of the general public, the elderly, and persons with disabilities.

St. Mary's Transit System operates daily, including evenings and on the weekends. Ridership has increased from approximately 54,395 passengers annually in FY 2000 to over 300,000 passengers annually in FY 2006 (SMTS, 2006). Ridership on the St. Mary's Transit System has increased but excess capacity exists (SMCMP, 2003).

2.5.2.10.3 Roads and Highways

There are no interstate highways in Calvert County or St. Mary's County. Transportation routes, both at the state maintained level and at the county maintained level are limited in both counties. The major highway in the area is Maryland state highway (MD) 2/4, which passes the CCNPP site on a north-south axis towards Solomon. MD 2/4 has two lanes going in each direction, with selected left and right hand turn lanes and some traffic lights at busy intersections. Access into Calvert County is also available via MD 231. This is a two lane road with bridge access to southern Charles County.

Table 2.5-38 shows the peak hour traffic volumes at Calvert Cliffs Parkway and the CCNPP site access road, MD 2/4 within 4 mi (6.4 km) of the site access road in the north and south direction (KLD, 2007).

Calvert County is surrounded by water except at the north end where it meets Anne Arundel County, Maryland. This somewhat limits the number of access points into the county. Calvert County is only 30 mi (48 km) long north to south, and 5 to 9 mi (8 to 14 km) wide. Calvert County owns 435 mi (700 km) of streets (CCCAFR, 2005). The Calvert County Comprehensive Plan has identified the need to reconstruct some roads. However, there is no new highway construction planned in the area by either the State of Maryland or Calvert County. Calvert County is connected to St. Mary's County on the south with a bridge at Solomon's Island.

St. Mary's County has adopted a county-wide Transportation Plan that is fully funded. In addition, the County's Comprehensive Zoning Plan and the Adequate Public Facilities Plan require residential and commercial developers to address the transportation impacts before new residential, commercial, or industrial entities are approved for construction.

2.5.2.10.4 Rail

There is some discussion of implementing light rail train service between Washington D.C. and La Plata (in Charles County) within the next 15 years. If this occurred, out-bound commuting along the MD 301 corridor would be expected to increase dramatically (SMCMP, 2003).

There are no rail depots in Calvert County. The nearest depot is in adjacent Prince George's County (MDDBED, 2007). There also are no rail depots in St. Mary's County. The nearest depot is in the adjacent Charles County, in Waldorf (MDDBED, 2007).

2.5.2.10.5 Freight Carriers

There are 23 motor freight common carriers that serve Calvert County and there are 17 motor freight common carriers that serve St. Mary's County (MDDBED, 2007).

2.5.2.10.6 Deep Water Ports

There are no deep water ports in Calvert County or St. Mary's County. Both are served by the Port of Baltimore (MDDBED, 2007). However, the CCNPP site does have its own barge dock that is used for delivery of large equipment or large quantities of materials.

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2.5.3 ~~Historical~~ Historical Properties

2.5.3.1 Overview

Detailed archaeological and historical surveys of the CCNPP site for Unit 3 and associated onsite transmission corridors supporting CCNPP Unit 3 have been conducted. The cultural resources investigation consisted of Phase Ia and Ib surveys and Phase II National Register Site Evaluations that were conducted of the proposed project area between October 2006 and May 2008. The Phase Ia survey was conducted to identify previously recorded or surface-visible archaeological resources and architectural resources, and to identify those areas with archaeological potential that would require a Phase Ib survey. Phase Ib survey (including an initial and two supplemental Phase Ib studies) was conducted to identify cultural resources within the project area, to evaluate the eligibility of identified architectural and historical resources for listing in the National Register of Historic Places (NRHP), and to provide recommendations on the potential National Register eligibility of identified archaeological sites. Phase II studies were performed to conclusively determine NRHP eligibility of potentially-eligible archaeological sites that could not be avoided by project construction.

There are two Areas of Potential Effect (APE) for cultural resources that could potentially be affected by the proposed project. The APE for archeological resources is 727 acres (294 hectares) and represents the location and extent of areas required for all project-related construction activities. The APE for visual effects to architectural resources includes the 727 acres (294 hectares) and extends 1000 ft (305 m) beyond the 727 acre (294 hectare) boundary.

Phase Ib survey identified 17 archaeological sites and 37 isolated archaeological finds within the project area. Based on Phase Ib results and review by the Maryland Historical Trust (MHT) four of the 17 identified archaeological sites were concluded to be Potentially-Eligible for listing in the National Register of Historic Places (NRHP). Because these four potentially-eligible archaeological sites could not be avoided by proposed construction activities, Phase II National Register evaluations were conducted to conclusively determine their NRHP eligibility. Based Phase II results and concurrence from MHT one site (18Cv474) is recommended as eligible to the NRHP; the other three sites were concluded to be ineligible for listing in the NRHP. Because this site is located within the proposed construction footprint of CCNPP Unit No. 3 and cannot be avoided by proposed construction, a Phase III Data Recovery of this site will be conducted to mitigate project impacts.

Five architectural and historical resources were also identified within the project area. Based on review of Phase I results by the MHT, four of these resources were determined eligible for listing in the NRHP and would likely be affected by proposed construction activities. These four properties include portions of the Baltimore and Drum Point Railroad prism, the abandoned YMCA Camp Conoy, Preston's Cliffs, and Parran's Park; the existing CCNPP facility was determined ineligible for listing in the NRHP. Three of the four NRHP- eligible historic properties may be impacted by proposed construction activities; no impacts are anticipated at Preston's Cliffs. Based on a Criteria of Effects Evaluation (GAI 2008b) and review by MHT, the project will have an Adverse Effect on two of these properties: the Baltimore and Drum Point Railroad and Camp Conoy. The undertaking will have No Effect on Preston's Cliffs and will have No Adverse Effect on Parran's Park.

2.5.3.2 Survey Methodologies

The Phase Ia and Ib survey methodologies were developed and conducted in accordance with Federal and State laws, regulations, and guidelines, including: Section 106 of the National Historic Preservation Act (USC, 2007), guidelines developed by the Advisory Council on

Historic Preservation, the amended Procedures for the Protection of Historic and Cultural Properties as set forth in 36 CFR 800 (CFR, 2007a), the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (NPS, 1983), National Register Bulletin 15 – How to Apply the National Register Criteria for Evaluation (NPS, 1992a), National Register Bulletin 21 – Defining Boundaries for National Register Properties (NPS, 1992b), the Standards and Guidelines for Archeological Investigations in Maryland (MHT, 1994), the Standards and Guidelines for Architectural and Historical Investigations in Maryland (MHT, 2000), and General Guidelines for Compliance-Generated Determinations of Eligibility (MHT, 2002).

2.5.3.3 Qualification of Surveyors

GAI Consultants, Inc. conducted the Phase Ia and Ib surveys. The surveyors meet and exceed the professional qualifications as stipulated in 36 CFR Part 61 (CFR, 2007b). The surveyors are listed on the Maryland Historical Trust Preservation Consultant List and have completed similar survey projects in Maryland.

2.5.3.4 Phase Ia Investigation

The Phase Ia survey, as discussed in the draft technical report Phase I Cultural Resource Investigations and Phase II National Register evaluations (GAI, 2008a) and the revised letter report, second supplemental Phase Ib Cultural Resources Investigation (GAI, 2009). Phase Ib Report (GAI, 2007), was conducted on the 727 acre (294 hectare) APE in October 2006 and September 2008. The Phase Ia survey included background research of files and records, geomorphological reconnaissance, and archaeological reconnaissance. Background research was conducted to identify previously recorded historic properties located within the proposed project area. Examination of archaeological site files, historic structure files, National Register of Historic Places listings, historic maps, and cultural resource reports was conducted at the Maryland Historical Trust in Crownsville, Maryland, and the Calvert County Historical Society and Calvert County Department of Planning and Zoning, both located in Prince Frederick, Maryland.

Geomorphological reconnaissance of the APE was conducted to identify landforms with moderate to high potential to contain archaeological sites, identify areas of surface disturbance, and estimate relative landform ages. The geomorphological reconnaissance included study of topographic maps and a walkover of the APE with periodic shovel and hand auger tests to observe the soils. Information was recorded on maps and with a GPS unit.

Archaeological reconnaissance of the APE was conducted to identify surface-visible archaeological resources and architectural resources. The archaeological reconnaissance included a walkover of the APE, excavation of occasional judgmental shovel tests, and locational recording of cultural resources observed. Information was recorded on maps and with a GPS unit. Architectural resources located within the APE for visual effects were noted and were photographed for preliminary review by an architectural historian.

The Phase Ia background research identified one previously recorded cultural resource, the Parran's Park tobacco barn, located within the proposed project area. The geomorphological reconnaissance determined that 245 acres (99 hectares) of landforms within the APE have a moderate to high archaeological potential that required Phase Ib investigation. The remaining 482 acres (195 hectares) were excluded due to slopes in excess of 10%, soil disturbance (largely associated with construction of the existing plant facility), or the presence of wetlands or recent deposits. The reconnaissance also determined that there are no settings within the APE with a potential for deeply buried archaeological resources. The archaeological reconnaissance re-located the previously recorded tobacco barn. Additional cultural resources

identified within the APE during the Phase Ia archaeological reconnaissance include portions of the Baltimore and Drum Point Railroad, five historic-age archaeological sites, and four previously unrecorded buildings.

2.5.3.5 Phase Ib Investigation

The initial Phase Ib archaeological survey was conducted on 190 acres (77 hectares), located in parcels throughout the APE, identified during the Phase Ia survey as having moderate to high potential for containing archaeological resources. An architectural survey was also conducted within the APE for visual effects. This survey was conducted between November 2006 through January 2007. Supplemental Phase Ib surveys were conducted of 55 acres (22 hectares) of new project areas in April/May 2008 and January 2009.

The Phase Ib survey included more extensive background research, systematic shovel testing within the 245 acres (99 hectares), and recording and evaluation of identified archaeological and architectural resources located within the APE and visual effects APE. Background research was conducted to collect material to be used to develop a context for evaluation of recorded resources and to provide background information on specific resources. The research included review of architectural survey reports, published histories of Calvert County, historic maps of the project area, and files at the University of Baltimore's Langsdale Library.

Systematic shovel testing was conducted in the 245 acres (99 hectares) identified as having moderate to high potential for containing archaeological resources. Shovel testing, rather than pedestrian surface inspection, was necessary due to poor ground visibility. Systematic shovel test pits (STPs) were excavated at 50 ft (15 m) intervals within transects spaced 50 ft (15 m) apart. Additional STPs were excavated in select areas to confirm the presence of cultural artifacts, disturbed soils, or recent deposits. A total of 4,672 STPs were excavated across the 245 acres (99 hectares). Excavated soils were screened through 0.25 in (0.6 cm) wire mesh for systematic artifact recovery.

Prehistoric and historic artifacts recovered during systematic shovel testing were bagged and labeled with appropriate provenience information. STP locations were recorded on project maps and were backfilled upon completion. Identified archaeological resources were recorded on standardized forms, plotted on maps, documented with photographs, and their locations were recorded using mapping grade GPS equipment. Identified architectural resources were recorded using photographs, maps, and Maryland Historical Trust Determination of Eligibility forms.

The architectural survey conducted as part of the Phase Ib study resulted in identification, recording, and evaluation of 5 historic-age architectural resources within the APE for visual effects. These resources include Parran's Park, Preston's Cliffs, the Calvert Cliffs Nuclear Power Plant and the Baltimore and Drum Point Railroad. They comprise 21 buildings/structures. Table 2.5-39 summarizes the five resources and the recommended National Register of Historic Places status (GAI, 2007). Based on results of this study and MHT's review (MHT, 2007) four of these resources are concluded to be NRHP-eligible.

The Phase Ib survey excavated 4,672 STPs within the 245 acres (99 hectares), of which 313 STPs yielded 1,120 artifacts (1,102 historic-age and 18 prehistoric). The survey resulted in identification, recording, and evaluation of 17 archaeological sites and 37 isolated archaeological finds. Table 2.5-40 summarizes the 17 sites. Table 2.5-41 summarizes the 37 isolated archaeological finds. Both tables show the recommended National Register of Historic Places status for each site and isolated find (GAI, 2007). Based on Phase Ib results and with

concurrence from MHT (MHT, 2007) four of the 17 sites were recommended Potentially Eligible for listing in the NRHP.

2.5.3.6 Phase II Investigations

Phase II National Register Evaluations were conducted of four archaeological sites (18Cv474, 18Cv480, 18Cv481 and 18Cv482) identified during Phase Ib survey that could not be avoided by project construction. This study included site-specific archival research, fieldwork and laboratory analysis. Phase II fieldwork, performed between March 10 and May 3, 2008, consisted of close-interval shovel testing and test unit excavations at each site. This work included excavation of 961 STPs and 46 test units.

Based on the results of this study and on MHT's concurrence with site eligibility recommendations (MHT, 2009), one of the four sites, Site 18Cv474, is concluded to be eligible for listing in the NRHP, under Criterion D. Site 18Cv474 is a mid-nineteenth to early-twentieth-century domestic site centered on the remains of a stone foundation and containing diagnostic artifacts, and features. The site has good integrity and a potential to yield additional dateable artifacts and features which may address research questions relating to nineteenth-century domestic agricultural sites in the region. Because of its NRHP eligibility, project impacts to Site 18Cv474 would constitute an adverse effect on this significant archaeological resource. Accordingly, it will be necessary to avoid or mitigate the adverse effect on the site. If Site 18Cv474 cannot be avoided by project construction Phase III data recovery excavations will be required to resolve adverse effects from project development.

The other three sites (18Cv480, 18Cv481 and 18Cv482) are recommended as Not Eligible to the NRHP under Criterion D. Based on this assessment, proposed construction impacts will constitute a "No Effect" to these sites. Consequently, no further archaeological investigations are required at Sites 18Cv480, 18Cv481 and 18Cv482.

2.5.3.7 Consultation

The Maryland State Historic Preservation Officer (SHPO) has been consulted with throughout completion of the Phase Ia and Ib surveys to ensure compliance and maintain a strong working relationship. The results of the Phase Ia and Ib surveys were documented in a February 2007 report (GAI, 2007). This report was submitted the Maryland SHPO for review and consultation under Section 106 of the National Historic Preservation Act (USC, 2007). Comments from the Phase Ia and Ib surveys were received from the Maryland SHPO in a letter dated June 7, 2007 (MHT, 2007). A Phase I/II Technical Report (GAI 2008a), a Supplemental Phase Ib Letter Report (GAI 2009) and a Criteria of Effects Evaluation (GAI 2008b), presenting the results of Phase I and II archaeological investigations and an assessment of effects for architectural and historical resources for the project, have been submitted to the MHT for review and consultation. The MHT provided comments on these three documents in a February 13, 2009, review letter (MHT 2009).

In addition, consultation with potentially interested Native American tribes is pending. Information from the tribal consultation could influence the National Register of Historic Places status of any of the recorded resources. As project design and layout are finalized, any additions to the APE would be surveyed and evaluated for potential impacts to historic properties in consultation with the Maryland SHPO, prior to activities taking place in the additional APE.

2.5.3.8 Site National Register Eligibility

Tables 2.5-42 and 2.5-43 list the NRHP eligible archaeological sites and NRHP eligible architectural resources located within the project APEs. These evaluations of eligibility reflect the comments received from the Maryland SHPO (MHT, 2007, and MHT, 2009). Phase III Data Recovery investigations and subsequent consultation with the Maryland SHPO will be performed for the NRHP-eligible site 18Cv474 if this site cannot be avoided by construction activities in order to mitigate adverse effects from project construction.

2.5.3.9 Offsite National Register Eligibility

Research was conducted to identify previously recorded cultural resources located within 10 mi (16 km) of the proposed project site that are listed in the National Register of Historic Places; that have been determined eligible or determined potentially eligible for listing on the National Register of Historic Places; that have not been evaluated for National Register of Historic Places listing; and/or that are listed in the Maryland Register of Historic Places or county and local registers or inventories. Research was conducted at the Maryland Historical Trust archives and library, Calvert County Department of Planning and Zoning, St. Mary's County Department of Land Use and Growth Management, and the Dorchester County Planning and Zoning Department. Research was also conducted of the National Register of Historic Places and list of National Historic Landmarks.

Research identified 1,029 previously surveyed, inventoried, and recorded cultural resources within a 10 mi (16 km) radius of the existing CCNPP site. This number includes historic districts, buildings, sites, and objects. Resource types range from archaeological sites and historic districts with numerous contributing resources to boats, a lighthouse, churches, dwellings, factories, commercial buildings, cemeteries, parks, and a tree. The resources identified are located in the Maryland counties of St. Mary's, Calvert, and Dorchester.

Appendix 2.5-A contains the full list of cultural resources located within the 10 mi (16 km) radius. None of the offsite cultural resources are affected by the construction and subsequent operation of the proposed CCNPP Unit 3.

2.5.3.10 References

CFR, 2007a. Title 36, Code of Federal Regulations, Part 800, Protection of Historic Properties, 2007.

CFR, 2007b. Title 36, Code of Federal Regulations, Part 61, Procedures for Approved State and local Government Historic Preservation Programs, 2007.

GAI, 2007. Management Summary, Phase Ib Cultural Resources Investigation, Calvert Cliffs Nuclear Power Plant, GAI Consultants Inc, February 23, 2007.

GAI, 2008a. Draft Technical Report, Phase I Cultural Resource Investigations and Phase II National Register Evaluations, Calvert Cliffs Nuclear Power Plant, GAI Consultants, Inc., August 2008.

GAI, 2008b. Letter Report, Criteria of Effects Evaluation, Calvert Cliffs Nuclear Power Plant, GAI Consultants, Inc. October 31, 2008.

GAI 2009. Revised Letter Report, Second Supplemental Phase Ib Cultural Resources Investigation, Calvert Cliffs Nuclear Power Plant, GAI Consultants, Inc., February 2009.

MHT, 1994. Standards and Guidelines for Archaeological Investigations in Maryland, Maryland Historical Trust, Shaffer, Gary D. and E. Cole, 1994.

MHT, 2000. Standards and Guidelines for Architectural and Historical Investigations in Maryland, Maryland Historical Trust, 2000.

MHT, 2002. General Guidelines for Compliance-Generated Determinations of Eligibility, Maryland Historical Trust, 2002.

MHT, 2007. Letter from J. Rodney Little, Director- State Historic Preservation Officer, Maryland Historical Trust to R.M. Krich, UniStar Nuclear, June 7, 2007.

MHT, 2009. Letter from J. Rodney Little, Director-State Historic Preservation Officer, Maryland Historical Trust to William Seib, U.S. Army Corps of Engineers, February 13, 2009.

NPS, 1983. Secretary of the Interior's Standards and Guidelines, Standards and Guidelines for Archeology and Historic Preservation, as published in the Federal Register (48 FR 44716 – 44742), National Park Service, U.S. Department of the Interior, Washington, D.C., 1983.

NPS, 1992a. National Register Bulletin 15 - How to Apply the National Register Criteria for Evaluation, National Park Service, U.S. Department of the Interior, Washington, D.C., 1992.

NPS, 1992b. National Register Bulletin 21 - Defining Boundaries for National Register Properties, National Park Service, U.S. Department of the Interior, Washington, D.C., 1992.

USC, 2007. Title 16, United States Code, Part 470, National Historic Preservation Act of 1966, as amended, 2007.

2.5.4 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (EO, 1999), directs Federal agencies to identify and address, as appropriate, disproportionately high and adverse health or environmental effects of their programs, policies, and activities on minority populations and low-income populations. Environmental justice is defined as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (EPA, 2007). The Council on Environmental Quality (CEQ) has provided guidance for addressing environmental justice (CEQ, 1997). NUREG-1555, Section 2.5.4 (NRC, 1999), the Nuclear Regulatory Commission (NRC) Policy Statement on the treatment of environmental justice in licensing matters (FR, 2004), and the NRC Office Instruction LIC-203, Revision 1, regarding procedural guidance for preparing environmental assessments (NRC, 2004) were used to develop the following analysis. Project impacts are discussed in Chapter 4 and Chapter 5 for any minority or low-income populations identified in this section.

Similar to Section 2.5.1 and Section 2.5.2, this section describes the minority and low income populations residing within a 50 mi (80 km) comparative geographic area and the two-county region of influence (ROI) that includes Calvert County and St. Mary's County. The 50 mi (80 km) comparative geographic area was selected based upon the guidance provided by NUREG-1555 (NRC, 1999) and was established by using the Calvert Cliffs Nuclear Power Plant (CCNPP) site as the center point and drawing a 50 mi (80 km) radius circle around the CCNPP site. This area includes portions of Maryland, Virginia, Washington D.C., and Delaware.

The region of influence (ROI) includes Calvert County and St. Mary's County, Maryland. The borders of these counties extend less than 30 mi (50 km) from the CCNPP site. These adjacent counties are located in the southern part of Maryland, on a peninsula bounded by the Chesapeake Bay and the Patuxent River. Potential socioeconomic impacts, if any, arising from the proposed plant are likely to be confined to these two counties because a majority of the existing workforce for CCNPP Units 1 and 2 reside in these counties and it is assumed that the potential in-migrating construction and operational workforces for CCNPP Unit 3 are most likely to reside in this same two-county ROI. More than 91% of the current workforce at CCNPP resides in Calvert County or St. Mary's County. Of the 833 employees at the CCNPP site, approximately 560 (67%) of the workers had a home address in Calvert County and approximately 200 (24%) of these workers had a home address in St. Mary's County.

2.5.4.1 Methodology to Identify and Locate Minority and Low Income Populations

Using ArcView® GIS software and U.S. Census Bureau's 2000 census data (USCB, 2000a) (USCB, 2000b), all census block groups within a 50 mi (80 km) radius were identified. A census block group was included in the 50 mi (80 km) comparative geographic area if its boundaries were fully contained in the area, or if any part of the census block group was contained in the area. The ArcView® GIS software and U.S. Census Bureau's 2000 census data were then used to determine the minority and low income characteristics, by census block group, within 50 mi (80 km) of the CCNPP site and within each county.

As shown in Table 2.5-44 (USCB, 2000a and USCB, 2006), the 50 mi (80 km) radius contains a total of 2,177 census block groups. Within the 50 mi (80 km) radius, there are 14 Maryland counties with a total of 1,116 census block groups. There also are 16 counties in Virginia that contain 605 census block groups, Washington D.C. contains a total of 433 census block groups, and there are 2 counties in Delaware that contain 23 census block groups.

Within the ROI, there are a total of 96 census block groups. Calvert County has a total of 41 census block groups and St. Mary's County has 55 census block groups.

2.5.4.1.1 Minority Populations

A "minority" racial population is defined as: American Indian or Alaskan Native; Asian, Native Hawaiian, or other Pacific Islander; Black (African-American) races; and multi-racial, or "some other race" (NRC, 2004). The racial population is expressed in terms of the number and/or percentage of people that are minorities in an area. The sum of these racial minority populations is referred to, within this section, as the aggregate racial minority population. Persons of Hispanic/Latino origin are the ethnic minority, may be of any race including the identified racial populations, and thus are identified as a separate subcategory.

The NRC guidance indicates that a minority population exists if either of the following two criteria is met:

1. The minority population of the census block group or environmental impact area (in this case the 50 mi (80 km) comparative geographic area) exceeds 50%; or
2. The minority population percentage of the environmental impact area is significantly greater (typically at least 20 percentage points) than the minority population percentage in the geographic area chosen for comparative analysis (in this case the 50-mile comparative geographic area).

For each of the 2,177 census block groups within the 50 mi (80 km) radius, the percent of the census block group's population represented by each minority classification (each race,

aggregate minority population, and Hispanic/Latino origin) was calculated and compared to the two criteria listed above. If any census block group minority percentage exceeded 50%, then the block group was identified as containing a minority population. If any census block group percentage exceeded the applicable percentage in the 50 mi (80 km) geographical area by more than 20 percentage points, then the census block group was identified as containing a minority population.

Table 2.5-45 and Figure 2.5-4 though Figure 2.5-8 (USCB, 2000a) identify the various minority block groups. Within the 50 mi (80 km) comparative geographic area there are a total of 891 census block groups that are classified as having minority populations. Maryland has 463 minority census block groups, Virginia has 113 blocks, Washington D.C. has 312 blocks, and Delaware has 3 minority census block groups.

There are no federally recognized Native American tribes within the 50 mi (80 km) comparative geographic area or within the State of Maryland. However, non-recognized Native American tribes and communities include the Piscataway-Conroy Confederacy based in La Plata, in Charles County. There are established Amish and Mennonite communities in the northwestern section of St. Mary's County, Maryland. Phase 1 cultural resources survey consultation with Native American tribes is complete. Additional consultation will also occur with the SHPO during Phase II investigations.

2.5.4.1.2 Low Income Populations

One of the common means of tracking income levels is by total income for a household, rather than by the total number of people in an area (as was done for minority populations, above). The Census Bureau's definition of a low income household is based on governmental statistical poverty thresholds. For the purposes of conducting this analysis, a block group is considered to be low income if either of the following two criteria are met:

1. The number of low income households in the census block group or the environmental impact site (in this case the 50 mi (80 km) geographic area) exceeds 50%; or
2. The percentage of households below the poverty level in an environmental impact area is significantly greater (typically at least 20 percentage points) than the low income population percentage in the geographic area chosen for comparative analysis (in this case, the 50 mi (80 km) comparative geographic area).

As determined by the 2000 Census survey (USCB, 2000b), low income households in each census block group were divided by the total households for that census block group to obtain the percentage of low income households per block group. If any census block group low income percentage exceeded 50%, then the block group was identified as containing a low income population. If any census block group percentage exceeded the applicable percentage in the geographical area by more than 20 percentage points, then the census block group was identified as containing a low income population.

Table 2.5-44 (USCB, 2000a and USCB, 2000b) and Table 2.5-46 (USCB, 2000b) present low income census block group information, and Figure 2.5-9 (USCB, 2000b) shows the locations of the low income block groups. Within the 50 mi (80 km) comparative geographic area there are a total of 67 census block groups that are classified as having low income populations. Maryland has 27 low income census blocks, Virginia has 3 blocks, Washington D.C. has 35 blocks, and Delaware has 2 low income census blocks.

2.5.4.2 Analysis

2.5.4.2.1 Minority Populations

50 mi (80 km) Comparative Geographic Area

Table 2.5-45 summarizes minority populations by the portion of each state and Washington D.C. within the 50 mi (80 km) radius of the site. There are 714 census block groups within the 50 mi (80 km) radius that have an African-American race population that meets at least one of the two criteria defined as a minority population; 22 census block groups are defined as Asian; 38 census block groups as "Some Other Race;" and 130 census block groups as Hispanic.

Based on the "20 percentage points" or the "exceeded 50%" criterion, no American Indian or Alaskan Native; Native Hawaiian or other Pacific Islander; or multi-racial minority census block groups exist in the geographic area.

As shown in Figure 2.5-4, concentrations of census block groups of African-American minority populations are most prevalent in the Washington-Arlington-Alexandria, DC-MD-VA-WV Metropolitan Area and in Prince Georges County, with 632 of the 714 census block groups classified as an African-American minority.

There are 22 census block groups that meet the criteria of being an Asian minority; the majority of these census blocks are in Fairfax County, Virginia. Figure 2.5-5 presents this information and shows the locations of Asian minority populations.

Figure 2.5-5 presents this information and shows the locations of Asian minority populations.

There are 38 census block groups of persons that are "Some Other Race" that meet the criteria; 12 of those census block groups are in Prince Georges County, Maryland and 15 are in the Washington-Arlington-Alexandria, DC-MD-VA-WV Metropolitan Area. Figure 2.5-6 presents this information and shows the locations of Other Minority Populations.

The aggregate (i.e., total) of 891 census block groups within the 50 mi (80 km) radius are defined as aggregate racial minority populations. The aggregate racial minority populations are shown on Figure 2.5-7.

There are 130 census block groups that have a population of persons of Hispanic origin. Hispanic populations within 50 mi (80 km) of the CCNPP site are primarily in Prince Georges County, Maryland, and in Fairfax County and Arlington County, Virginia. Figure 2.5-8 locates the census block groups with significant Hispanic populations.

Two-County Region of Influence

No census block group in Calvert County is defined as being a racial minority or a Hispanic minority population, or as having an aggregate (i.e., total) minority population.

Two census block groups in St. Mary's County are defined as meeting the definition of having an aggregate minority concentration, but no census block groups met the definition of having an individual racial minority or a Hispanic population.

2.5.4.2.2 Low Income Populations

50 mi (80 km) Comparative Geographic Area

As shown in Table 2.5-46, there are very few concentrations of low income populations within 50 mi (80 km) of the site. Figure 2.5-9 shows the locations of low income

census block groups within a 50 mi (80 km) radius of the CCNPP site. There are 67 census block groups that exceed the 50 mi (80 km) radius' average number of low income households by 20 percentage points or more. Of those 67 census block groups, 35 are located in Washington DC and 27 are located in Maryland.

Two-County Region of Influence

There are no low income census block groups in Calvert County. There is only 1 low income census block group in St. Mary's County, out of the total of 55 census block groups located there.

2.5.4.3 Subsistence Uses

Subsistence is the use of natural resources as food for consumption and for ceremonial and traditional cultural purposes. Often these types of activities are discussed for minority populations, but sometimes also for low income populations. Subsistence information is often difficult to collect, partially because it is relatively site specific and because it is difficult to differentiate between subsistence uses and recreational uses of natural resources. Often, a number of different informational sources have to be relied upon that collect data via different methods, for different classifications of groups, and for differing types of uses. Thus, it is not possible to present this information for the 50 mi (80 km) and ROI study areas that have been used in previous sections. Common major classifications of subsistence uses include gathering plants for consumption, for medicinal purposes, and use in ceremonial activities; fishing; and hunting. These activities are in addition to or replace portions of the foods that might be bought from businesses, and thus can represent reduced costs of living. They also often represent an important part of the cultural identity or lifestyle of the participants. This section presents the subsistence/recreational information that is available from a variety of sources obtained through an internet search.

About 220 acres (89 hectares) of the CCNPP site are currently developed. For safety and security reasons the general public is not allowed uncontrolled access to the CCNPP site. Thus, no ceremonial or subsistence gathering of culturally significant plants, berries, or other vegetation occurs on the site.

2.5.4.3.1 Plant Gathering

Although no information could be found, it is assumed that collection of plants for ceremonial and food purposes (i.e., culturally significant plants, berries, or other vegetation) could be occurring in the two-county region of influence. Again, minority and low-income populations might be conducting these collection activities, off of the CCNPP site more often, or could be harvesting greater quantities of plants, than the general population.

2.5.4.3.2 Hunting

As stated in Section 2.4.1.2.1 and Section 4.3.1.2, white-tail deer and waterfowl populations are abundant throughout Maryland and on or near the CCNPP site. These populations represent a valuable resource for hunters. While hunting for deer and waterfowl occurs in the ROI, no hunting is allowed on the CCNPP site.

2.5.4.3.3 Fishing

Predominant subsistence, recreational, and commercial fisheries in the Chesapeake Bay include the eastern oyster, blue crab, soft shell clams, and striped bass. Weakfish, bluefish, spot, croaker, flounder, herring, other finfish, and other shellfish are also harvested in the

Chesapeake Bay. As shown in ~~Table~~ ~~Table 2.5-47~~ ~~2.5-47~~ (CFEPTAP, 2004), the most common species caught by Chesapeake Bay recreational users within the states of Maryland and Virginia in the year 2000 were Atlantic Croaker (3,780 tons or 3,429 metric tons, mt), Striped Bass (2,054 tons or 1,863 mt), Summer Flounder (852 tons or 773 mt), Weakfish (585 tons or 531 mt), and Bluefish (239 tons or 217 mt). In comparison, the most common commercially caught species were Atlantic Menhaden, Black Sea Bass or Blue Crab (see table note regarding conflicting information), Atlantic Croaker, Striped Bass, Eastern Oyster, and Summer Flounder. Chesapeake Bay oysters breeding and nursery areas occur and are commercially harvested near the CCNPP site (MDNR, 2006).

In 2004, Gibson and McClafferty (GM, 2005) conducted studies of recreational fishing for three areas of the Chesapeake Bay, including the Lower Patapsco and Back Rivers in the Baltimore region, the Lower Potomac and Anacostia Rivers in the Washington D.C. region, and the Elizabeth and James Rivers in the Tidewater region of Virginia. As shown in Table 2.5-48 through Table 2.5-50 (GM, 2005), the most common species harvested in the Baltimore region were Striped Bass/Rockfish (27.9%), White Perch (21.8%), and Blue Crab/Crab (12.0%). In the Washington D.C. region, the most commonly harvested species were Catfish (29.2%), Striped Bass/Rockfish (17.3%), and Largemouth Bass (10.9%). In the Virginia region, the most commonly harvested species were Croaker (38.1%), Spot (19.3%), and Flounder (12.2%).

Some of Gibson and McClafferty's findings also are summarized by minority anglers and by the income levels of anglers. The following sections briefly summarize the results of these recreational studies, focusing on the fishing characteristics of minority and low income populations.

2.5.4.4 Subsistence Uses by Minority Populations

As shown in ~~Table~~ ~~Table 2.5-51~~ ~~2.5-51~~ through ~~Table~~ ~~Table 2.5-53~~ ~~2.5-53~~ (GM, 2005), the vast majority of minorities harvesting fish and shellfish in the three regions studied were African-Americans (ranging from 33% to 49% of the total number of people surveyed). There were very limited proportions of other types of minorities, but the most notable were 9.3% of Hispanics/Latinos and 5.7% of Asians surveyed in the Washington D.C. region.

Significantly more Caucasian recreationists fished from boats, and conversely a significantly greater percentage of minorities fished from the shore or piers in the three regions. Minorities traveled 10 mi or less to conduct their harvesting activities more often than Caucasians (83% versus 54%) in the Washington D.C. region, about equally (48% versus 44%) in the Virginia region, and less often than Caucasians (67% versus 85%) in the Baltimore region.

African-Americans in the Baltimore region and in the Virginia region were more likely than Caucasians to state that subsistence fishing was important as a means of reducing food expenses (44% versus 17% in Baltimore and 52% versus 34% in Virginia). However, equal percentages of African-Americans and Caucasians stated that subsistence was important as a way of reducing food costs (12% versus 13%). African-Americans were somewhat to moderately more likely than Caucasians to eat the fish that they harvested in all three regions. For both groups, the impression that the water was polluted was a greater reason given for not consuming fish than was the publication of fish advisories.

2.5.4.5 Subsistence Uses by Low Income Populations

Gibson and McClafferty (GM, 2005) also evaluated the harvesting activities of anglers using the following annual income categories: \$20,000 or less, \$20,001 to \$40,000, \$40,001 to \$80,000, and \$80,001 or more. They found that, generally speaking, there were relatively few

differences between recreationists in each of these income categories than were found for minorities as shown in Tables 2.5-54 and Table 2.5-55. In the Baltimore region, the only significant differences were that those in the \$20,001 - \$40,000 income category were more likely (40%) than other groups to state that subsistence fishing was important as a means of reducing food expenses. In addition, those with annual incomes of \$40,001 or more were more likely to consume fish than members of other income categories.

In the Washington D.C. and the Virginia regions, those making \$80,000 or less were more likely to fish from shore or a pier, and those making \$80,001 or more were more likely to fish from a boat. As might be expected, those fishing from boats also usually preferred to use sites that had boat ramps available for use. Also, anglers making \$40,000 or less were more likely to fish within 10 mi (16 km) of their residences and those making \$40,001 or more were more likely to travel greater distances. For both regions, the importance of subsistence fishing as a means for reducing food expenses for the household tended to decrease with each increase in income category.

2.5.5 References

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Table 2.5-1— Counties of Residence for Existing CCNPP Units 1 and 2 Operational Employees

County of Residence	CCNPP Units 1 and 2 Employees	
	Number	Percent
Alleghany	1	0.1%
Anne Arundel	27	3.2%
Baltimore	4	0.5%
Calvert	562	67.5%
Charles	30	3.6%
Howard	2	0.2%
Prince Georges	6	0.7%
St. Mary's	198	23.8%
Washington	1	0.1%
Out of State	2	0.2%
Total	833	99.9%

Note:

The total percentage does not equal 100.0% due to rounding.

References:

November 2006 CCNPP Units 1&2 plant records.

Table 2.5-2— Select Demographic and Economic Characteristics of Residential Population, By Distance from the CCNPP Site, 2000

Demographic and Economic Characteristics	Radii/Distances mi (km)					
	0 to 10 mi (0 to 16 km)	10 to 20 mi (16 to 32 km)	20 to 30 mi (32 to 48 km)	30 to 40 mi (48 to 60 km)	40 to 50 mi (60 to 80 km)	0 to 50 mi (0 to 80 km)
Total Population ⁽¹⁾	40,745	111,659	163,358	618,846	2,259,157	3,195,170
Age Composition:						
Person under 5 yrs old	2,992	7,588	10,873	41,578	148,788	211,819
Persons 18 yrs and over	29,458	80,295	120,226	456,584	1,738,152	2,424,715
Persons 65 yrs and older	4,203	9,721	18,951	61,657	218,766	313,298
Gender Composition:						
Females	21,169	55,925	83,981	322,859	1,161,278	1,645,212
Ethnic Composition:						
Caucasians ⁽²⁾	35,454	91,113	116,465	265,801	1,170,147	1,678,980
African-Americans ⁽²⁾	5,219	15,657	40,378	322,496	767,075	1,150,825
Persons of Hispanic/ Latino origins ⁽³⁾	782	1,885	2,578	14,135	241,685	261,065
Income Characteristics:						
Median Household Income ⁽⁴⁾ , 1999	\$61,369	\$59,241	\$57,945	\$60,221	\$57,464	\$57,464

Notes:

(1) Resident population excludes transient populations.

(2) Persons describing themselves as of one race only.

(3) Persons of Hispanic or Latino origin may be of any race.

(4) Median Household Income is the median income for the cumulative households from the CCNPP site; for example. Median Household Income in column labeled 30 to 40 mi (48 to 60 km) is the median for all household 0 to 40 mi (0 to 60 km) from the plant site.

References:

USCB, 2000c

USCB, 2005

Table 2.5-3— Historical and Projected Populations in Calvert County, St. Mary's County, and Maryland from 1990 to 2080

Year	Calvert County		St. Mary's County		Region Of Influence – Calvert and St. Mary's Combined		State of Maryland	
	Population	Average Annual Growth Percent	Population	Average Annual Growth Percent	Population	Average Annual Growth Percent	Population	Average Annual Growth Percent
1990	51,372	--	75,974	--	127,346	--	4,780,753	--
2000	74,563	3.80%	86,211	1.27%	160,774	2.36%	5,296,486	1.03%
2010	95,450	2.50%	107,700	2.25%	203,150	2.37%	5,897,600	1.08%
2015	98,650	0.66%	119,450	2.09%	218,100	1.43%	6,176,075	0.93%
2020	101,750	0.62%	130,750	1.82%	232,500	1.29%	6,386,225	0.67%
2030	105,850	0.40%	151,700	1.50%	257,550	1.03%	6,737,750	0.54%
2040	128,245	1.94%	181,412	1.80%	309,657	1.86%	7,110,558	0.54%
2050	141,127	0.96%	212,317	1.59%	353,444	1.33%	7,503,995	0.54%
2055	147,568	0.90%	228,897	1.52%	376,465	1.27%	7,708,802	0.54%
2060	154,009	0.86%	246,228	1.47%	400,237	1.23%	7,919,200	0.54%
2070	166,891	0.81%	283,145	1.41%	450,036	1.18%	8,357,380	0.54%
2080	179,773	0.75%	323,067	1.33%	502,840	1.12%	8,819,804	0.54%

References:
MDDP, 2005
USCB, 2005

Table 2.5-4— Select Demographic and Economic Characteristics of Persons in Calvert County, St. Mary's County, Maryland, and the U.S. From 2000 to 2004

Demographic and Economic Characteristics	Calvert County	St. Mary's County	State of Maryland	U.S.
Population Levels, Change, Density:				
Total Population, 2000	74,563	86,211	5,296,486	281,421,906
Total Population Estimate, 2004	86,434	94,921	5,558,058	293,656,842
Average Annual Percent Change, 2000-2004	4.0%	2.5%	1.2%	1.1%
Population per square mile, 2000	376.5	238.6	541.9	79.6
Age Composition:				
Persons under 5 years old, 2004	6.1%	7.0%	6.7%	6.8%
Persons 18 years and over, 2004	73.5%	73.4%	74.9%	75%
Persons 65 years old and older, 2004	9.2%	9.2%	11.4%	12.4%
Gender Composition:				
Females, 2004	50.7%	49.9%	51.6%	50.8%
Ethnic Composition:				
Caucasians, 2004 ⁽¹⁾	84.7%	82.1%	64.5%	80.4%
African-Americans, 2004 ⁽¹⁾	12.8%	13.9%	29.1%	12.8%
Persons of Hispanic/Latino origin, 2004 ⁽²⁾	1.9%	2.2%	5.4%	14.1%
Income Characteristics:				
Median Household Income, 2003	\$71,488	\$58,651	\$54,302	\$43,318
Persons below poverty, 2003	5.3%	7.4%	8.8%	12.5%

Notes:

(1). Persons describing themselves as being of one race only

(2). Persons of Hispanic or Latino Origin may be of any race

References:

USCB, 2005

Table 2.5-5— Demographic and Economic Characteristics of Residential Populations in Select Cities and Communities within Calvert County and St. Mary's County, 2000

(Page 1 of 2)

Demographic Characteristics	Cities or Communities (CDPs)								
	California, CDP ⁽¹⁾	Calvert Beach- Long Beach, CDP	Charlotte Hall, CDP	Chesapeake Estates-Drum Point, CDP	Leonardtown	Lexington Park, CDP	Lusby	North Beach	Prince Frederick, CDP
Total Population	9,307	2,487	1,214	11,503	1,896	11,021	1,666	1,880	1,432
Age Composition:									
Persons under 5 years old	694	184	58	974	80	1,112	86	154	92
Persons 18 years and over	6,568	1,718	994	7,558	1,594	7,554	1,191	1,366	1,118
Persons 65 years and older	678	169	403	748	578	337	216	136	372
Gender Composition:									
Females	4,635	1,246	484	5,753	1,036	5,138	861	994	830
Ethnic Composition:									
Caucasians ⁽³⁾	7,323	2,248	923	9,837	1,380	6,612	1,202	1,683	891
African-Americans ⁽³⁾	1,370	165	245	1,210	455	3,306	412	117	484
Persons of Hispanic / Latino ⁽²⁾ origin	255	42	7	280	16	527	46	39	26
Income Characteristics:									
Median Household Income ⁽⁴⁾ , 1999	\$62,320	\$63,262	\$51,111	\$56,904	\$35,563	\$39,214	\$40,769	\$46,111	\$44,625
Persons below poverty	407	28	169	558	330	1,219	72	203	226

Table 2.5-5— Demographic and Economic Characteristics of Residential Populations in Select Cities and Communities within Calvert County and St. Mary's County, 2000
(Page 2 of 2)

Demographic Characteristics	Cities or Communities (CDPs)								
	California, CDP ⁽¹⁾	Calvert Beach- Long Beach, CDP	Charlotte Hall, CDP	Chesapeake Estates-Drum Point, CDP	Leonardtown	Lexington Park, CDP	Lusby	North Beach	Prince Frederick, CDP

Notes:

- (1) CDP = Census Designated Place; a statistical counterpart of an incorporated place; a concentration of population, housing, and commercial structures that are identifiable by name, but are not incorporated.
- (2) Persons of Hispanic/Latino origin may be of any race or a combination of races.
- (3) Persons describing themselves as of one race only.
- (4) The Census Bureau states that the median household income for the Prince Frederick CDP is \$22,321. This number is inconsistent with other Census Bureau income information and, therefore, is assumed to be incorrectly reported by them. Thus, for illustrative purposes, the median family income is reported here.

References:
USCB, 2000c

Table 2.5-6— Resident and Transient Populations, by Sector and Distance from the CCNPP Site, 2000
(Page 1 of 2)

Sector/Type of Population	Population by Radii/Distances mi (km)						
	0 to 1 (0 to 2)	1 to 2 (2 to 3)	2 to 3 (3 to 5)	3 to 4 (5 to 6)	4 to 5 (6 to 8)	5 to 10 (8 to 16)	0 to 10 (0 to 16)
N Total	0	0	0	0	0	0	0
Transient Population	0	0	0	0	0	0	0
Resident Population	0	0	0	0	0	0	0
NNE Total	0	0	0	0	0	0	0
Transient Population	0	0	0	0	0	0	0
Resident Population	0	0	0	0	0	0	0
NE Total	0	0	0	0	0	1	1
Transient Population	0	0	0	0	0	0	0
Resident Population	0	0	0	0	0	1	1
ENE Total	0	0	0	0	0	606	606
Transient Population	0	0	0	0	0	408	408
Resident Population	0	0	0	0	0	198	198
E Total	0	0	0	0	0	35	35
Transient Population	0	0	0	0	0	0	0
Resident Population	0	0	0	0	0	35	35
ESE Total	0	0	0	0	0	0	0
Transient Population	0	0	0	0	0	0	0
Resident Population	0	0	0	0	0	0	0
SE Total	0	0	283	0	188	0	471
Transient Population	0	0	283	0	0	0	0
Resident Population	0	0	0	0	188	0	0
SSE Total	0	0	33	974	3,242	4,664	8,913
Transient Population	0	0	0	535	0	0	535
Resident Population	0	0	33	439	3,242	4,664	8,378
S Total	0	67	245	189	1,504	9,006	11,011
Transient Population	0	0	217	0	0	3,163	3,380
Resident Population	0	67	28	189	1,504	5,843	7,631
SSW Total	0	43	207	143	204	6,795	7,392
Transient Population	0	0	0	0	0	1,477	1,477
Resident Population	0	43	207	143	204	5,318	5,915
SW Total	0	329	0	165	57	2,865	3,416
Transient Population	0	0	0	0	0	485	485
Resident Population	0	329	0	165	57	2,380	2,931
WSW Total	0	857	702	65	445	2,323	4,392
Transient Population	0	0	90	0	360	33	483
Resident Population	0	857	612	65	85	2,290	3,909
W Total	30	432	289	175	357	1,465	2,748

Table 2.5-6— Resident and Transient Populations, by Sector and Distance from the CCNPP Site, 2000

(Page 2 of 2)

Sector/Type of Population	Population by Radii/Distances mi (km)						
	0 to 1 (0 to 2)	1 to 2 (2 to 3)	2 to 3 (3 to 5)	3 to 4 (5 to 6)	4 to 5 (6 to 8)	5 to 10 (8 to 16)	0 to 10 (0 to 16)
Transient Population	0	0	0	0	0	135	135
Resident Population	30	432	289	175	357	1,330	2,613
WNW Total	0	55	59	85	506	2,723	3,428
Transient Population	0	0	0	0	0	378	378
Resident Population	0	55	59	85	506	2,345	3,050
NW Total	0	695	1,157	1,037	319	2,416	5,624
Transient Population	0	263	151	0	32	0	446
Resident Population	0	432	1,006	1,037	287	2,416	5,178
NWW Total	0	0	0	0	0	718	718
Transient Population	0	0	0	0	0	0	0
Resident Population	0	0	0	0	0	718	718
Total Population	30	2,478	2,975	2,833	6,822	33,617	48,755
Transient Population	0	263	741	535	392	6,079	8,010
Resident Population	30	2,215	2,234	2,298	6,430	27,538	40,745
References: USCB, 2000b							

Table 2.5-7— Commuting Patterns To and From the ROI, 2000

Parameter	County/ROI	Charles County	Prince George's County	Anne Arundel County	District of Columbia	Other	Total
Worker Inflow to ROI	Calvert	640	641	1,118	59	678	3,136
	St. Mary's	2,197	378	262	126	1,357	4,320
	ROI	2,837	1,019	1,380	185	2,035	7,456
Worker Outflow from ROI	Calvert	1,178	8,243	1,739	3,967	3,909	19,036
	St. Mary's	3,313	2,244	80	1,828	1,886	9,351
	ROI	4,491	10,487	1,819	5,795	5,795	28,387
Net Worker Outflow from ROI	Calvert	538	7,602	621	3,908	3,231	15,900
	St. Mary's	1,116	1,866	(182)	1,702	529	5,031
	ROI	1,654	9,468	439	5,610	3,760	20,931

Note:

ROI = region of influence (Calvert County and St. Mary's County combined)

References:

USCB, 2000b

**Table 2.5-8— Current Population and Population Projections for the CCNPP
Low Population Zone**

Year	LPZ Population	Average Annual Percent Change for the 10 Year Period
2000	2,508	N/A
2010	3,210	2.50%
2015	3,318	N/A
2020	3,422	0.64%
2030	3,560	0.40%
2040	4,314	1.94%
2050	4,747	0.96%
2055	4,964	N/A
2060	5,180	0.88%
2070	5,614	0.81%
2080	6,047	0.75%

Notes:

The populations for years 2010 through 2080 have been projected by calculating a growth rate using state population projections for Calvert County as the base.

N/A = not applicable

References:

CCNPP, 2002

Table 2.5-9— Population Projections from 2000 to 2080 within 50 mi (80 km) of the CCNPP Site

Year	Population Projections within Radii/Distances mi (km)							Annual Average Percent Change for the 10 Year Period
	0 to 10 mi ⁽¹⁾ (0 to 16 km)	10 to 20 mi (16 to 32 km)	20 to 30 mi (32 to 48 km)		30 to 40 mi (48 to 60 km)	40 to 50 mi (60 to 80 km)	Total 0 to 50 mi (0 to 80 km)	
2000	40,745	112,841	162,006		618,907	2,267,761	3,202,260	N/A
2010	46,272	128,170	183,991		703,086	2,576,246	3,637,765	1.28%
2015	49,031	135,788	194,909		744,798	2,729,381	3,853,907	N/A
2020	51,126	141,542	203,279		776,201	2,843,806	4,015,954	0.99%
2030	55,256	152,988	219,647		839,208	3,075,213	4,342,312	0.78%
2040	61,716	170,849	245,359		936,915	3,432,515	4,847,354	1.11%
2050	66,723	184,811	265,321		1,013,675	3,714,072	5,244,602	0.79%
2055	69,214	191,711	275,225		1,051,616	3,853,665	5,441,431	N/A
2060	71,781	198,759	285,436		1,090,176	3,994,214	5,640,366	0.73%
2070	76,764	212,590	305,242		1,165,937	4,272,187	6,032,720	0.67%
2080	81,633	226,166	324,618		1,240,436	4,545,717	6,418,570	0.62%

Notes:

Residential population in 2000, US Census Bureau, Decennial Census.

The populations for years 2010 through 2060 have been projected by calculating a growth rate using state population projections (by county) as the base.

References:

NRC, 2003

USCB, 2005

Table 2.5-10— Population Projections by Sector and Distance from the CCNPP Site from 2000 to 2080

(Page 1 of 12)

Sector	Radius in mi (km)	Population Projection by Year											
		2000	2010	2015	2020	2030	2040	2050	2055	2060	2070	2080	
N	0-1 mi (0-2 km)	0	0	0	0	0	0	0	0	0	0	0	0
NNE		0	0	0	0	0	0	0	0	0	0	0	0
NE		0	0	0	0	0	0	0	0	0	0	0	0
ENE		0	0	0	0	0	0	0	0	0	0	0	0
E		0	0	0	0	0	0	0	0	0	0	0	0
ESE		0	0	0	0	0	0	0	0	0	0	0	0
SE		0	0	0	0	0	0	0	0	0	0	0	0
SSE		0	0	0	0	0	0	0	0	0	0	0	0
S		0	0	0	0	0	0	0	0	0	0	0	0
SSW		0	0	0	0	0	0	0	0	0	0	0	0
SW		0	0	0	0	0	0	0	0	0	0	0	0
WSW		0	0	0	0	0	0	0	0	0	0	0	0
W		30	34	36	38	41	45	49	51	53	57	60	
WNW		0	0	0	0	0	0	0	0	0	0	0	0
NW		0	0	0	0	0	0	0	0	0	0	0	0
NNW		0	0	0	0	0	0	0	0	0	0	0	0
Total		30	34	36	38	41	45	49	51	53	57	60	

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Table 2.5-10— Population Projections by Sector and Distance from the CCNPP Site from 2000 to 2080

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Sector	Radius in mi (km)	Population Projection by Year										
		2000	2010	2015	2020	2030	2040	2050	2055	2060	2070	2080
N	1-2 mi (2-3 km)	0	0	0	0	0	0	0	0	0	0	0
NNE		0	0	0	0	0	0	0	0	0	0	0
NE		0	0	0	0	0	0	0	0	0	0	0
ENE		0	0	0	0	0	0	0	0	0	0	0
E		0	0	0	0	0	0	0	0	0	0	0
ESE		0	0	0	0	0	0	0	0	0	0	0
SE		0	0	0	0	0	0	0	0	0	0	0
SSE		0	0	0	0	0	0	0	0	0	0	0
S		67	76	81	84	91	102	110	114	118	126	134
SSW		43	49	51	55	58	65	70	73	76	80	86
SW		329	374	396	414	446	497	538	560	581	620	660
WSW		857	972	1,032	1,074	1,165	1,297	1,403	1,455	1,508	1,613	1,715
W		432	492	520	542	585	654	707	733	761	814	866
WNW		55	62	66	69	74	84	90	93	97	103	110
NW		432	491	520	542	586	654	708	734	761	814	866
NNW		0	0	0	0	0	0	0	0	0	0	0
Total		2,215	2,516	2,666	2,780	3,005	3,353	3,626	3,762	3,902	4,170	4,437

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Table 2.5-10— Population Projections by Sector and Distance from the CCNPP Site from 2000 to 2080

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Sector	Radius in mi (km)	Population Projection by Year										
		2000	2010	2015	2020	2030	2040	2050	2055	2060	2070	2080
N	2-3 mi (3-5 km)	0	0	0	0	0	0	0	0	0	0	0
NNE		0	0	0	0	0	0	0	0	0	0	0
NE		0	0	0	0	0	0	0	0	0	0	0
ENE		0	0	0	0	0	0	0	0	0	0	0
E		0	0	0	0	0	0	0	0	0	0	0
ESE		0	0	0	0	0	0	0	0	0	0	0
SE		0	0	0	0	0	0	0	0	0	0	0
SSE		33	37	40	41	45	50	54	56	058	62	66
S		28	32	34	35	38	42	46	48	11849	53	56
SSW		207	235	249	259	281	312	339	351	76364	390	415
SW		0	0	0	0	0	0	0	0	5810	0	0
WSW		612	695	737	767	830	927	1,002	1,040	1,5081,077	1,153	1,226
W		289	329	346	362	391	439	475	491	761510	545	578
WNW		59	67	71	74	81	90	96	100	97104	111	118
NW		1,006	1,144	1,208	1,260	1,362	1,524	1,646	1,709	1,7611,771	1,896	2,014
NNW	0	0	0	0	0	0	0	0	0	0	0	
Total		2,234	2,539	2,685	2,798	3,028	3,384	3,658	3,795	3,9023,933	4,210	4,473

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Table 2.5-10— Population Projections by Sector and Distance from the CCNPP Site from 2000 to 2080

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Sector	Radius in mi (km)	Population Projection by Year										
		2000	2010	2015	2020	2030	2040	2050	2055	2060	2070	2080
N	3-4 mi (5-6 km)	0	0	0	0	0	0	0	0	0	0	0
NNE		0	0	0	0	0	0	0	0	0	0	0
NE		0	0	0	0	0	0	0	0	0	0	0
ENE		0	0	0	0	0	0	0	0	0	0	0
E		0	0	0	0	0	0	0	0	0	0	0
ESE		0	0	0	0	0	0	0	0	0	0	0
SE		0	0	0	0	0	0	0	0	0	0	0
SSE		439	498	528	551	596	664	718	746	774	828	880
S		189	215	227	236	255	286	310	321	333	356	379
SSW		143	162	172	180	194	217	234	242	252	270	286
SW		165	187	198	207	224	250	269	280	290	311	330
WSW		65	74	78	81	88	98	106	110	114	122	130
W		175	199	211	219	237	265	287	297	308	330	351
WNW		85	97	102	107	115	129	139	144	150	160	170
NW		1,037	1,177	1,248	1,302	1,407	1,570	1,697	1,760	1,827	1,955	2,079
NNW		0	0	0	0	0	0	0	0	0	0	0
Total		2,298	2,609	2,764	2,883	3,116	3,479	3,760	3,900	4,048	4,332	4,605

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Table 2.5-10— Population Projections by Sector and Distance from the CCNPP Site from 2000 to 2080
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Sector	Radius in mi (km)	Population Projection by Year										
		2000	2010	2015	2020	2030	2040	2050	2055	2060	2070	2080
N	4-5 mi (6-8 km)	0	0	0	0	0	0	0	0	0	0	0
NNE		0	0	0	0	0	0	0	0	0	0	0
NE		0	0	0	0	0	0	0	0	0	0	0
ENE		0	0	0	0	0	0	0	0	0	0	0
E		0	0	0	0	0	0	0	0	0	0	0
ESE		0	0	0	0	0	0	0	0	0	0	0
SE		188	214	226	239	253	289	306	318	331	354	377
SSE		3,242	3,681	3,903	4,065	4,398	4,909	5,307	5,508	5,709	6,107	6,497
S		1,504	1,705	1,811	1,886	2,040	2,280	2,462	2,553	2,650	2,834	3,014
SSW		204	232	246	257	276	309	334	346	360	384	409
SW		57	65	69	73	76	86	94	97	102	107	114
WSW		85	96	102	106	115	129	140	145	150	160	170
W		357	406	429	448	485	541	584	606	629	672	716
WNW		506	575	609	635	687	766	828	860	891	954	1,015
NW		287	328	346	361	390	435	470	488	505	540	574
NNW	0	0	0	0	0	0	0	0	0	0	0	
Total		6,430	7,302	7,741	8,070	8,720	9,744	10,525	10,921	11,327	12,112	12,886

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Table 2.5-10— Population Projections by Sector and Distance from the CCNPP Site from 2000 to 2080

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Sector	Radius in mi (km)	Population Projection by Year										
		2000	2010	2015	2020	2030	2040	2050	2055	2060	2070	2080
N	5-10 mi (8-16 km)	0	0	0	0	0	0	0	0	0	0	0
NNE		0	0	0	0	0	0	0	0	0	0	0
NE		1	1	1	1	1	2	2	2	2	2	2
ENE		198	224	238	250	268	301	324	335	349	373	396
E		35	40	42	44	48	54	57	59	62	66	70
ESE		0	0	0	0	0	0	0	0	0	0	0
SE		0	0	0	0	0	0	0	0	0	0	0
SSE		4,664	5,302	5,612	5,855	6,325	7,059	7,640	7,922	8,217	8,784	9,349
S		5,843	6,630	7,028	7,339	7,924	8,847	9,565	9,928	10,293	11,006	11,698
SSW		5,318	6,041	6,405	6,670	7,212	8,055	8,712	9,040	9,367	10,021	10,657
SW		2,380	2,703	2,863	2,985	3,228	3,604	3,900	4,044	4,192	4,487	4,766
WSW		2,290	2,598	2,757	2,872	3,108	3,471	3,751	3,887	4,038	4,315	4,589
W		1,330	1,512	1,598	1,669	1,804	2,014	2,177	2,259	2,344	2,505	2,665
WNW		2,345	2,665	2,823	2,941	3,182	3,551	3,842	3,985	4,132	4,417	4,702
NW		2,416	2,742	2,908	3,031	3,275	3,662	3,958	4,106	4,259	4,553	4,842
NNW		718	814	864	900	971	1,091	1,177	1,218	1,263	1,354	1,436
Total		27,538	31,272	33,139	34,557	37,346	41,711	45,105	46,785	48,518	51,883	55,172

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Table 2.5-10— Population Projections by Sector and Distance from the CCNPP Site from 2000 to 2080

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Sector	Radius in mi (km)	Population Projection by Year											
		2000	2010	2015	2020	2030	2040	2050	2055	2060	2070	2080	
N	0-10 mi (0-16 km)	0	0	0	0	0	0	0	0	0	0	0	0
NNE		0	0	0	0	0	0	0	0	0	0	0	0
NE		1	1	1	1	1	2	2	2	2	2	2	2
ENE		198	224	238	250	268	301	324	335	349	373	396	
E		35	40	42	44	48	54	57	59	62	66	70	
ESE		0	0	0	0	0	0	0	0	0	0	0	
SE		188	214	226	239	253	289	306	318	331	354	377	
SSE		8,378	9,518	10,083	10,512	11,364	12,682	13,719	14,232	14,758	15,781	16,792	
S		7,631	8,658	9,181	9,580	10,348	11,557	12,493	12,964	13,443	14,375	15,281	
SSW		5,915	6,719	7,123	7,421	8,021	8,958	9,689	10,052	10,419	11,145	11,853	
SW		2,931	3,329	3,526	3,679	3,974	4,437	4,801	4,981	5,165	5,525	5,870	
WSW		3,909	4,435	4,706	4,900	5,306	5,922	6,402	6,637	6,887	7,363	7,830	
W		2,613	2,972	3,140	3,278	3,543	3,958	4,279	4,437	4,605	4,923	5,236	
WNW		3,050	3,466	3,671	3,826	4,139	4,620	4,995	5,182	5,374	5,745	6,115	
NW		5,178	5,882	6,230	6,496	7,020	7,845	8,479	8,797	9,123	9,758	10,375	
NNW		718	814	864	900	971	1,091	1,177	1,218	1,263	1,354	1,436	
Total		40,745	46,272	49,031	51,126	55,256	61,716	66,723	69,214	71,781	76,764	81,633	

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Table 2.5-10— Population Projections by Sector and Distance from the CCNPP Site from 2000 to 2080

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Sector	Radius in mi (km)	Population Projection by Year										
		2000	2010	2015	2020	2030	2040	2050	2055	2060	2070	2080
N	10-20 mi (16-32 km)	0	0	0	0	0	0	0	0	0	0	0
NNE		403	461	484	506	545	609	662	684	710	761	807
NE		1,020	1,157	1,224	1,283	1,381	1,549	1,669	1,732	1,799	1,924	2,042
ENE		1,668	1,895	2,007	2,094	2,258	2,531	2,735	2,828	2,939	3,146	3,338
E		236	268	283	297	319	358	387	401	416	445	472
ESE		709	804	850	891	960	1,076	1,164	1,201	1,251	1,339	1,420
SE		183	207	220	231	248	277	299	311	324	344	366
SSE		477	541	574	599	647	721	780	810	840	899	955
S		20,464	23,249	24,631	25,666	27,746	30,976	33,525	34,774	36,049	38,553	41,024
SSW		16,134	18,326	19,415	20,228	21,882	24,428	26,419	27,413	28,418	30,391	32,348
SW		8,487	9,636	10,211	10,656	11,510	12,858	13,901	14,412	14,954	15,989	17,003
WSW		7,558	8,584	9,095	9,476	10,242	11,448	12,377	12,841	13,309	14,239	15,150
W		11,560	13,135	13,916	14,505	15,672	17,505	18,932	19,645	20,356	21,777	23,177
WNW		11,857	13,469	14,269	14,875	16,079	17,947	19,416	20,148	20,883	22,336	23,764
NW		11,561	13,127	13,911	14,498	15,677	17,503	18,932	19,647	20,366	21,787	23,172
NNW		20,524	23,311	24,698	25,737	27,822	31,063	33,613	34,864	36,145	38,660	41,128
Total		112,841	128,170	135,788	141,542	152,988	170,849	184,811	191,711	198,759	212,590	226,166

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Table 2.5-10— Population Projections by Sector and Distance from the CCNPP Site from 2000 to 2080

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Sector	Radius in mi (km)	Population Projection by Year										
		2000	2010	2015	2020	2030	2040	2050	2055	2060	2070	2080
N	20-30 mi (32-48 km)	7,848	8,916	9,443	9,844	10,636	11,883	12,850	13,325	13,816	14,782	15,715
NNE		6,479	7,356	7,788	8,141	8,783	9,815	10,609	10,998	11,425	12,210	12,969
NE		8,948	10,155	10,763	11,239	12,130	13,560	14,655	15,193	15,772	16,862	17,916
ENE		17,492	19,871	21,042	21,944	23,722	26,491	28,653	29,714	30,819	32,961	35,028
E		468	532	560	590	634	713	767	792	827	885	936
ESE		594	675	711	745	806	901	975	1,007	1,050	1,120	1,188
SE		0	0	0	0	0	0	0	0	0	0	0
SSE		795	902	956	1,001	1,076	1,210	1,303	1,347	1,401	1,498	1,591
S		2,277	2,586	2,738	2,864	3,091	3,455	3,731	3,869	4,019	4,295	4,561
SSW		4,340	4,920	5,215	5,454	5,875	6,588	7,106	7,368	7,654	8,178	8,689
SW		2,985	3,383	3,589	3,753	4,044	4,531	4,892	5,072	5,265	5,628	5,979
WSW		4,213	4,778	5,062	5,295	5,705	6,399	6,899	7,148	7,427	7,946	8,436
W		8,962	10,176	10,788	11,255	12,155	13,580	14,672	15,226	15,796	16,884	17,956
WNW		54,835	62,305	65,997	68,765	74,356	82,998	89,805	93,194	96,586	103,295	109,939
NW		19,014	21,594	22,882	23,845	25,784	28,786	31,138	32,311	33,496	35,826	38,106
NNW		22,756	25,842	27,375	28,544	30,850	34,449	37,266	38,661	40,083	42,872	45,609
Total		162,006	183,991	194,909	203,279	219,647	245,359	265,321	275,225	285,436	305,242	324,618

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Table 2.5-10— Population Projections by Sector and Distance from the CCNPP Site from 2000 to 2080

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Sector	Radius in mi (km)	Population Projection by Year										
		2000	2010	2015	2020	2030	2040	2050	2055	2060	2070	2080
N	30-40 mi (48-64 km)	91,036	103,420	109,561	114,165	123,437	137,816	149,109	154,667	160,363	171,478	182,399
NNE		13,477	15,310	16,214	16,906	18,277	20,403	22,073	22,896	23,738	25,387	27,008
NE		19,513	22,165	23,463	24,489	26,455	29,555	31,949	33,126	34,388	36,766	39,078
ENE		9,015	10,231	10,832	11,333	12,217	13,675	14,757	15,298	15,893	16,996	18,041
E		4,739	5,378	5,702	5,949	6,419	7,187	7,767	8,044	8,351	8,928	9,480
ESE		3,635	4,127	4,369	4,568	4,925	5,512	5,952	6,166	6,405	6,846	7,275
SE		1,030	1,172	1,241	1,293	1,392	1,560	1,692	1,749	1,815	1,941	2,062
SSE		1,136	1,284	1,362	1,435	1,539	1,731	1,859	1,928	2,007	2,152	2,273
S		5,420	6,140	6,515	6,823	7,345	8,223	8,872	9,191	9,573	10,225	10,858
SSW		8,751	9,943	10,526	10,980	11,866	13,252	14,337	14,868	15,422	16,493	17,538
SW		3,412	3,872	4,102	4,284	4,625	5,172	5,592	5,792	6,014	6,425	6,835
WSW		13,953	15,845	16,775	17,523	18,910	21,133	22,858	23,695	24,588	26,287	27,947
W		8,346	9,480	10,042	10,466	11,308	12,642	13,669	14,177	14,698	15,725	16,728
WNW		67,423	76,586	81,139	84,554	91,429	102,053	110,420	114,573	118,742	127,024	135,130
NW		272,660	309,789	328,181	341,869	369,758	412,679	446,573	463,377	480,230	513,631	546,610
NNW		95,361	108,344	114,774	119,564	129,306	144,322	156,196	162,069	167,949	179,633	191,174
Total		618,907	703,086	744,798	776,201	839,208	936,915	1,013,675	1,051,616	1,090,176	1,165,937	1,240,436

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Table 2.5-10— Population Projections by Sector and Distance from the CCNPP Site from 2000 to 2080

(Page 11 of 12)

Sector	Radius in mi (km)	Population Projection by Year										
		2000	2010	2015	2020	2030	2040	2050	2055	2060	2070	2080
N	40-50 mi (64-80 km)	144,479	164,125	173,874	181,180	195,922	218,681	236,615	245,505	254,480	272,183	289,551
NNE		9,394	10,664	11,294	11,795	12,732	14,241	15,381	15,948	16,542	17,709	18,816
NE		14,160	16,076	17,026	17,798	19,197	21,463	23,183	24,040	24,965	26,697	28,341
ENE		29,169	33,109	35,073	36,634	39,535	44,180	47,771	49,528	51,405	54,953	58,405
E		77,460	87,967	93,207	97,178	105,036	117,302	126,849	131,593	136,448	145,955	155,142
ESE		15,217	17,284	18,304	19,093	20,628	23,047	24,924	25,855	26,809	28,677	30,489
SE		7,158	8,128	8,615	8,985	9,699	10,849	11,725	12,157	12,618	13,482	14,333
SSE		1,855	2,107	2,225	2,335	2,512	2,817	3,036	3,143	3,270	3,500	3,713
S		7,210	8,177	8,641	9,081	9,770	10,956	11,813	12,225	12,735	13,620	14,438
SSW		6,820	7,747	8,199	8,568	9,244	10,338	11,171	11,586	12,016	12,861	13,653
SW		5,020	5,703	6,038	6,296	6,803	7,602	8,223	8,529	8,844	9,459	10,054
WSW		7,842	8,907	9,437	9,836	10,630	11,885	12,841	13,327	13,813	14,781	15,714
W		25,052	28,458	30,150	31,418	33,967	37,923	41,032	42,576	44,129	47,203	50,219
WNW		346,300	393,439	416,837	434,233	469,619	524,107	567,169	588,508	609,926	652,343	694,298
NW		1,285,806	1,460,774	1,547,654	1,612,230	1,743,683	1,946,050	2,105,862	2,185,135	2,264,575	2,422,224	2,577,585
NNW	284,819	323,581	342,807	357,146	386,236	431,074	466,477	484,010	501,639	536,540	570,966	
Total		2,267,761	2,576,246	2,729,381	2,843,806	3,075,213	3,432,515	3,714,072	3,853,665	3,994,214	4,272,187	4,545,717

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Table 2.5-10— Population Projections by Sector and Distance from the CCNPP Site from 2000 to 2080

(Page 12 of 12)

Sector	Radius in mi (km)	Population Projection by Year										
		2000	2010	2015	2020	2030	2040	2050	2055	2060	2070	2080
N	0-50 mi (0-80 km)	243,363	276,461	292,878	305,189	329,995	368,380	398,574	413,497	428,659	458,443	487,665
NNE		29,753	33,791	35,780	37,348	40,337	45,068	48,725	50,526	52,415	56,067	59,600
NE		43,642	49,554	52,477	54,810	59,164	66,129	71,458	74,093	76,926	82,251	87,379
ENE		57,542	65,330	69,192	72,255	78,000	87,178	94,240	97,703	101,405	108,429	115,208
E		82,938	94,185	99,794	104,058	112,456	125,614	135,827	140,889	146,104	156,279	166,100
ESE		20,155	22,890	24,234	25,297	27,319	30,536	33,015	34,229	35,515	37,982	40,372
SE		8,559	9,721	10,302	10,748	11,592	12,975	14,022	14,535	15,088	16,121	17,138
SSE		12,641	14,352	15,200	15,882	17,138	19,161	20,697	21,460	22,276	23,830	25,324
S		43,002	48,810	51,706	54,014	58,300	65,167	70,434	73,023	75,819	81,068	86,162
SSW		41,960	47,655	50,478	52,651	56,888	63,564	68,722	71,287	73,929	79,068	84,081
SW		22,835	25,923	27,466	28,668	30,956	34,600	37,409	38,786	40,242	43,026	45,741
WSW		37,475	42,549	45,075	47,030	50,793	56,787	61,377	63,648	66,024	70,616	75,077
W		56,533	64,221	68,036	70,922	76,645	85,608	92,584	96,061	99,584	106,512	113,316
WNW		483,465	549,265	581,913	606,253	655,622	731,725	791,805	821,605	851,511	910,743	969,246
NW		1,594,219	1,811,166	1,918,858	1,998,938	2,161,922	2,412,863	2,610,984	2,709,267	2,807,790	3,003,226	3,195,848
NNW		424,178	481,892	510,518	531,891	575,185	641,999	694,729	720,822	747,079	799,059	850,313
Total		3,202,260	3,637,765	3,853,907	4,015,954	4,342,312	4,847,354	5,244,602	5,441,431	5,640,366	6,032,720	6,418,570

References:
 NRC, 2003
 USCB, 2005
 USCB, 2000c
 DEDO, 2000
 MDP, 2005
 VEC, 2006

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Table 2.5-11— Counties of Residence of the Existing Operational Workforce at CCNPP Units 1 and 2, November 2006

County/Location of Residence	CCNPP Units 1 & 2 O&M Workforce	
	Number	Percent
Alleghany	1	0.1%
Anne Arundel	27	3.2
Baltimore	4	0.5
Calvert	562	67.5
Charles	30	3.6
Howard	2	0.2
Prince Georges	6	0.7
St. Mary's	198	23.8
Washington	1	0.1
Out of State	2	0.2
Totals	833	99.9%
ROI Totals	760	91.3

Note:

The total percentage does not equal 100.0% due to rounding.

References:

November 2006 CCNPP Units 1&2 plant records

Table 2.5-12— Civilian Labor Force Data for Calvert County and St. Mary's County, October 2006

County/Location	Individuals in Labor Force	Individuals Employed	Individuals Unemployed	Unemployment Rate, Percent
Calvert County	47,247	45,971	1,276	2.7%
St. Mary's County	50,375	48,793	1,582	3.1
Washington-Arlington-Alexandria Metro Area	583,647	560,958	22,689	3.9
State of Maryland	3,030,037	2,918,627	111,410	3.7
U.S.	151,998,000	145,287,000	6,711,000	4.4

Notes:

The Washington DC MSA includes the District of Columbia and parts of the states of Maryland (Calvert, Charles, Frederick, Montgomery, and Prince George's counties), Virginia (Arlington, Clarke, Culpeper, Fairfax, Fauquier, King George, Loudoun, Prince William, Spotsylvania, Stafford, and Warren counties and the cities of Alexandria, Fairfax, Fall Church, Manassas, and Manassas Park), and West Virginia (Berkeley and Jefferson counties.) The civilian labor force does not include employees of the Patuxent Naval Air Station in St. Mary's County; unemployment rates are only determined for civilian labor forces.

References:

MDDCCR, MDDLRL, 2006a

Table 2.5-13— Construction and Extraction Occupational Labor Force, Washington-Arlington-Alexandria Metro Area, May 2005

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Construction and Extraction Occupations						
Occupation Code	Occupation Title	Employment	Wage Estimates			
			Median Hourly	Mean Hourly	Mean Annual (1)	Mean RSE (2)
47-0000	Construction and Extraction Occupations	108,860	\$17.50	\$19.04	\$39,610	0.9 %
47-1011	First-Line Supervisors/Managers of Construction Trades and Extraction Workers	12,480	\$27.17	\$28.74	\$59,790	1.8 %
47-2011	Boilermakers	150	\$23.10	\$23.20	\$48,270	6.9 %
47-2021	Brick masons and Block masons	2,380	\$21.16	\$20.75	\$43,160	2.5 %
47-2022	Stonemasons	(3)	\$21.51	\$22.46	\$46,720	6.8 %
47-2031	Carpenters	14,420	\$18.81	\$19.84	\$41,260	1.9 %
47-2041	Carpet Installers	(3)	\$13.69	\$15.78	\$32,830	13.5 %
47-2042	Floor Layers, Except Carpet, Wood, and Hard Tiles	50	\$15.72	\$15.96	\$33,190	3.8 %
47-2043	Floor Sanders and Finishers	160	\$12.07	\$13.05	\$27,150	2.9 %
47-2044	Tile and Marble Setters	1,050	\$18.03	\$18.50	\$38,490	5.2 %
47-2051	Cement Masons and Concrete Finishers	4,220	\$16.08	\$16.21	\$33,720	2.9 %
47-2053	Terrazzo Workers and Finishers	(3)	\$15.73	\$15.89	\$33,050	3.0 %
47-2061	Construction Laborers	18,460	\$12.68	\$13.07	\$27,180	1.7 %
47-2071	Paving, Surfacing, and Tamping Equipment Operators	490	\$13.77	\$14.59	\$30,350	2.6 %
47-2072	Pile-Driver Operators	90	\$19.41	\$19.39	\$40,340	7.4 %
47-2073	Operating Engineers and Other Construction Equipment Operators	5,160	\$18.69	\$18.57	\$38,620	1.0 %
47-2081	Drywall and Ceiling Tile Installers	2,040	\$16.34	\$17.02	\$35,400	3.1 %
47-2082	Tapers	250	\$15.94	\$16.14	\$33,570	1.8 %
47-2111	Electricians	11,040	\$22.97	\$23.27	\$48,390	2.0 %
47-2121	Glaziers	800	\$18.77	\$18.49	\$38,460	4.6 %
47-2131	Insulation Workers, Floor, Ceiling, and Wall	710	\$16.57	\$17.63	\$36,680	9.2 %

Table 2.5-13— Construction and Extraction Occupational Labor Force, Washington-Arlington-Alexandria Metro Area, May 2005

(Page 2 of 3)

Construction and Extraction Occupations						
Occupation Code	Occupation Title	Employment	Wage Estimates			
			Median Hourly	Mean Hourly	Mean Annual (1)	Mean RSE (2)
47-2132	Insulation Workers, Mechanical	370	\$17.78	\$19.80	\$41,190	13.7 %
47-2141	Painters, Construction and Maintenance	4,530	\$16.19	\$17.19	\$35,750	3.3 %
47-2142	Paperhangers	30	\$19.49	\$19.10	\$39,720	3.2 %
47-2151	Pipe layers	1,860	\$15.63	\$15.86	\$32,990	2.8 %
47-2152	Plumbers, Pipe fitters, and Steamfitters	6,200	\$20.77	\$21.89	\$45,520	2.3 %
47-2161	Plasterers and Stucco Masons	40	\$19.82	\$19.34	\$40,220	3.9 %
47-2171	Reinforcing Iron and Rebar Workers	540	\$19.18	\$18.70	\$38,900	2.9 %
47-2181	Roofers	1,460	\$15.59	\$16.81	\$34,960	4.0 %
47-2211	Sheet Metal Workers	4,180	\$17.96	\$19.73	\$41,040	4.0 %
47-2221	Structural Iron and Steel Workers	500	\$18.08	\$18.62	\$38,730	2.6 %
47-3011	Helpers--Brick masons, Block masons, Stonemasons, and Tile and Marble Setters	1,750	\$12.36	\$12.80	\$26,620	2.4 %
47-3012	Helpers--Carpenters	1,890	\$11.61	\$11.88	\$24,700	2.3 %
47-3013	Helpers--Electricians	3,230	\$13.19	\$13.51	\$28,090	3.1 %
47-3014	Helpers--Painters, Paperhangers, Plasterers, and Stucco Masons	(3)	\$8.11	\$9.58	\$19,930	13.3 %
47-3015	Helpers--Pipe layers, Plumbers, Pipe fitters, and Steamfitters	1,310	\$12.56	\$12.61	\$26,240	2.9 %
47-3016	Helpers--Roofers	440	\$11.93	\$12.10	\$25,160	2.9 %
47-3019	Helpers, Construction Trades, All Other	530	\$14.94	\$15.54	\$32,320	2.6 %
47-4011	Construction and Building Inspectors	2,030	\$23.94	\$24.34	\$50,620	2.1 %
47-4021	Elevator Installers and Repairers	340	\$30.95	\$29.90	\$62,200	2.3 %
47-4031	Fence Erectors	(3)	\$11.82	\$12.56	\$26,130	5.8 %
47-4041	Hazardous Materials Removal Workers	350	\$14.11	\$15.14	\$31,500	3.7 %
47-4051	Highway Maintenance Workers	740	\$16.28	\$16.47	\$34,260	3.1 %

Table 2.5-13— Construction and Extraction Occupational Labor Force, Washington-Arlington-Alexandria Metro Area, May 2005

(Page 3 of 3)

Construction and Extraction Occupations						
Occupation Code	Occupation Title	Employment	Wage Estimates			
			Median Hourly	Mean Hourly	Mean Annual (1)	Mean RSE (2)
47-4071	Septic Tank Servicers and Sewer Pipe Cleaners	(3)	\$13.74	\$17.13	\$35,630	19.0 %
47-4099	Construction and Related Workers, All Other	560	\$15.10	\$15.70	\$32,650	3.0 %
47-5021	Earth Drillers, Except Oil and Gas	(3)	\$17.45	\$18.65	\$38,790	7.7 %
47-5031	Explosives Workers, Ordnance Handling Experts, and Blasters	200	\$20.56	\$20.87	\$43,410	15.1 %
47-5081	Helpers--Extraction Workers	(3)	\$12.46	\$12.36	\$25,700	3.1 %
47-5099	Extraction Workers, All Other	(3)	\$12.89	\$13.81	\$28,720	3.6 %

Notes:

(1) Annual wages have been calculated by multiplying the hourly mean wage by a "year-round, full-time" hour's figure of 2,080 hours; for those occupations where there is not an hourly mean wage published, the annual wage has been directly calculated from the reported survey data.

(2) The relative standard error (RSE) is a measure of the reliability of a survey statistic. The smaller the relative standard error, the more precise the estimate.

(3) Estimates not released.

References:

BLS, 2005

Table 2.5-14— Employment by Sectors and Industry in Calvert County St. Mary's County, and ROI, 2005

Sector/Industry	Employment		
	Calvert County	St. Mary's County	ROI
Total Government and Private Sector Employment	20,810	37,591	58,401
Government Total:	3,796	11,092	14,888
Federal	139	6,858	6,997
State	224	778	1,002
Local	3,433	3,456	6,889
Private Sector Total:	17,014	26,499	43,513
Natural Resources & Mining	18	29	47
Construction	2,300	1,860	4,160
Manufacturing	725	487	1,212
Trade, Transportation, Utilities	4,704	6,458	11,162
Information	316	226	542
Financial Activities	756	942	1,698
Professional and Business Services	1,599	8,655	10,254
Educational and Health Services	2,979	3,742	6,721
Leisure and Hospitality	2,849	3,224	6,073
Other Services	768	876	1,644
Unclassified	0	0	0

Note:

This table provides employment levels, by industry, for people working in Calvert County and St. Mary's County only. Total employment levels are less than those provided in Table 2.5.2-2, which displays totals for all people living in each county, even if they are working in other counties. The large difference in the totals in these tables shows how many people are commuting outside of the ROI to work.

References:

MDDCCR, MDDLRL, 2006a

Table 2.5-15— Major Non-Governmental Employers in Calvert County, 2005

Calvert County		
Firm	Product/Service	Employment
Calvert Memorial Hospital	Medical Services	915
Constellation Energy/CCNPP	Nuclear power generation	833
ARC of Southern Maryland	Medical and Social Services	375
Wal-Mart	Consumer goods	310
DynCorp	Tech services	296
Recorded Books	Audio books	291
DM Group	Printing, fulfillment services	250
All American Ambulance & Transport	Ambulance services	240
Calvert Nursing Center	Medical services	203
The Gott Company	Fuel, A/C, heating services	200
Safeway	Groceries	175
Holiday Inn Select	Lodgings	171
Chesapeake Biological Laboratory	Fisheries research	168

References:

MDDCCR;MDDLRL, 2006a

Table 2.5-16— Fastest Growing Private Industries in St. Mary's County, from 2004 to 2005 i65028

St. Mary's County		
Firm	Product/Service	Employment
Patuxent NAS	Military Installation	10,500
DynCorp/CSC	Professional and Tech services	1,500
EMA	Engineering, science services	1,000
St Mary's Hospital	Medical services	900
BAE Systems	Tech products & services	854
Veridian	Aeronautics, R D T and E	700
Information Spectrum	Professional & tech services	450
Northrop Grumman	Systems and software design	450
St Mary's College of Maryland	Higher Education	400
Food Lion	Groceries	344
Target	Consumer goods	319
Booz Allen Hamilton	Systems engineer and mgt	315
Sabre	Engineering services	300
Burch Oil	Gas and oil	280
Charlotte Hall Vet's Home	Nursing home, Asst living	280
Wal-Mart	Consumer goods	280
Mantech International	Systems and software dev	260
J F Taylor	Technology simulations	210
Lundeberg School of Seamanship	Seamanship training	210
Eagle Systems	Systems engineering and mgt	200
National Technology Assoc	Systems engineering and mgt	200
Lowe's	Home improvement products	193
DCS	Technology simulation	175
Merkle Mailing Services	Data Entry and fulfillment	145

References:
MDDCCR;MDDLRL, 2006a

Table 2.5-17— Fastest Growing Private Industries in Calvert County and St. Mary's County from 2004 and 2005

County/Industry	Fastest Growing Private Industries 2004 – 2005, Percent Increase
Calvert County:	
Credit intermediation and related activities	32.3%
Merchant wholesalers, durable goods	17.4
General merchandise stores	12.4
Transit and ground passenger transportation	10.8
Miscellaneous store retailers	9.0
Health and personal care stores	8.9
Waste management & remediation services	7.9
St. Mary's County:	
Transit and ground passenger transportation	11.7%
Miscellaneous store retailers	11.6
Nursing and residential care facilities	11.0
Real estate	9.1
Admin and support services	6.9
Personal and laundry services	6.7
Merchant wholesalers, durable goods	4.5
References: MDDCCR, MDDLRL, 2006a	

Table 2.5-18— Percent of Individuals in Poverty and Median Household Income in Calvert County and St. Mary's County, Maryland, and the U.S. 2000 and 2005

County/Location	Percent of Individuals Below the Poverty Level, 2005	Median Household Income		
		2000	2005	Average Annual Percent Change, 2000-2005
Calvert County	5.5	\$65,945	\$84,388	5.6
St. Mary's County	9.0	\$54,706	\$62,939	3.0
State of Maryland	8.2	\$52,868	\$61,592	3.3
U.S.	13.2	\$41,994	\$46,242	2.0

References:
USCB, 2005

Table 2.5-19— Mean Salaries in Calvert County, St. Mary's County Maryland, and the U.S. 2005

County/Location	Mean Earnings, 2005	Percent Greater Than The National Average
Calvert County	\$95,403	49.5%
St. Mary's County	\$74,825	17.2
State of Maryland	\$79,644	24.8
U.S.	\$63,834	N/A

Note:

N/A = not available

References:

USCB, 2005

Table 2.5-20— Occupied Housing Units and Vacant (available) Housing Units in Calvert County, St. Mary's County, and the ROI, 2000

Housing Type	County		Total ROI
	Calvert	St. Mary's	
Total Housing Units:	27,576	34,081	61,657
Total Occupied Units:	25,447	30,642	56,089
Owner Occupied	21,679	21,996	43,675
Renter Occupied	3,768	8,646	12,414
Total Unoccupied Units:	2,129	3,439	5,568
Year-around Units	1,125	2,223	3,348
Seasonal, recreational, or occasional use units	1,004	1,216	2,220
Percentage of Unoccupied Units (versus total housing units):	7.7%	10.1%	9.0%

References:
USCB, 2000c
USCB, 2000d
USCB, 2006

New Housing Units (Single-family and Multi-family) Authorized for Construction, Calvert County, St Mary's County from 2001 to 2005

County/Area	Total Existing Units, 2000	Number of Authorized New Housing Units by Year					
		2001	2002	2003	2004	2005	
Calvert County	27,576	886	928	791	525	488	-
St. Mary's County	34,081	549	914	1,094	1,384	993	-
Total ROI	61,657	1,435	1,842	1,885	1,909	1,481	-
References: MDDP, 2006							

Table 2.5-21— New Housing Units (Single-family and Multi-family) Authorized for Construction, Calvert County, St Mary's County from 2001 to 2005

<u>County/Area</u>	<u>Total Existing Units, 2000</u>	<u>Number of Authorized New Housing Units by Year</u>					
		<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	
<u>Calvert County</u>	<u>27,576</u>	<u>886</u>	<u>928</u>	<u>791</u>	<u>525</u>	<u>488</u>	<u>-</u>
<u>St. Mary's County</u>	<u>34,081</u>	<u>549</u>	<u>914</u>	<u>1,094</u>	<u>1,384</u>	<u>993</u>	<u>-</u>
<u>Total ROI</u>	<u>61,657</u>	<u>1,435</u>	<u>1,842</u>	<u>1,885</u>	<u>1,909</u>	<u>1,481</u>	<u>-</u>
<u>References:</u>							
<u>MDDP, 2006</u>							

Apartment and Townhouse Complexes in Calvert County and St. Mary's County

(Page 1 of 2)

Complex	Location	Number of Bedrooms	Length of Leases
Calvert County:			
Solomons Landing Condominiums	Solomons	N/A	N/A
Calvertown Townhouses	Prince Frederick	N/A	N/A
Silverwood Farm Apartments	Prince Frederick	1-3	6 or 12 months
Courtyards at Fishing Creek	Chesapeake Beach	N/A	N/A
Towne Center Apartments	North Beach	N/A	N/A
Subtotals	5 complexes	N/A	N/A
St. Mary's County:			
Abberly Court	Lexington Park	1-3	12 or 13 months
Cherry Cove Manufactured Housing	Lexington Park	N/A	N/A
Cook Management Corporation	Lexington Park	N/A	N/A
Garrett Park	Lexington Park	N/A	N/A
Greens at Hilton Run	Lexington Park	1-3	6, 7, 9, or 12 months
Indian Bridge Apartments	Lexington Park	N/A	N/A
Joe Baker Village	Lexington Park	N/A	N/A
Lexington Village Apartments	Lexington Park	N/A	N/A
Mayfaire Apartments	Lexington Park	N/A	N/A
Lex Woods Apartments	Lexington Park	N/A	N/A
Lord Calvert Manufactured Home Park	Lexington Park	N/A	N/A
Queen Anne Park Apartments	Lexington Park	1-3	1, 3, 6 or 12 months
St. Mary's Landing	Lexington Park	Efficiency-3	3, 6, or 12 months
Spring Valley Apartments	Lexington Park	N/A	N/A
Spyglass at Cedar Cove	Lexington Park	1-2	12 or 13 months
Sunset Hall	Lexington Park	N/A	N/A
Valley Drive Estates	Lexington Park	N/A	N/A
Complex			
Villas at Greenview (townhouses)	Lexington Park	2-3	12 months
Apartments of Wildewood	California	1-2	6 or 12 months
Chancellors Run Apartments	Great Mills	N/A	N/A
Foxchase Village	Great Mills	2	1 month
Greenview Village Townhomes	Great Mills	2-3	1 month
Hickory Hills Townhomes	Great Mills	Studio-3	1, 3, 6 or 12 months
Hunting Meadows Apartments	Callaway	N/A	N/A
Breton Bay	Leonardtown	N/A	N/A
Cedar Lane Apartments	Leonardtown	N/A	N/A
Leonardtown Village Apartments	Leonardtown	N/A	N/A
New Towne Village	Leonardtown	N/A	N/A
Subtotals	28 complexes	N/A	N/A
Totals	33 complexes	N/A	N/A

Apartment and Townhouse Complexes in Calvert County and St. Mary's County

(Page 2 of 2)

Note:

N/A = not available

References:

Apartment, 2007

Table 2.5-22— Apartment and Townhouse Complexes in Calvert County and St. Mary's County

(Page 1 of 2)

Complex	Location	Number of Bedrooms	Length of Leases
Calvert County:			
Solomons Landing Condominiums	Solomons	N/A	N/A
Calvertown Townhouses	Prince Frederick	N/A	N/A
Silverwood Farm Apartments	Prince Frederick	1 – 3	6 or 12 months
Courtyards at Fishing Creek	Chesapeake Beach	N/A	N/A
Towne Center Apartments	North Beach	N/A	N/A
Subtotals	5 complexes	N/A	N/A
St. Mary's County:			
Abberly Court	Lexington Park	1-3	12 or 13 months
Cherry Cove Manufactured Housing	Lexington Park	N/A	N/A
Cook Management Corporation	Lexington Park	N/A	N/A
Garrett Park	Lexington Park	N/A	N/A
Greens at Hilton Run	Lexington Park	1-3	6, 7, 9, or 12 months
Indian Bridge Apartments	Lexington Park	N/A	N/A
Joe Baker Village	Lexington Park	N/A	N/A
Lexington Village Apartments	Lexington Park	N/A	N/A
Mayfaire Apartments	Lexington Park	N/A	N/A
Lex-Woods Apartments	Lexington Park	N/A	N/A
Lord Calvert Manufactured Home Park	Lexington Park	N/A	N/A
Queen Anne Park Apartments	Lexington Park	1 – 3	1, 3, 6 or 12 months
St. Mary's Landing	Lexington Park	Efficiency – 3	3, 6, or 12 months
Spring Valley Apartments	Lexington Park	N/A	N/A
Spyglass at Cedar Cove	Lexington Park	1-2	12 or 13 months
Sunset Hall	Lexington Park	N/A	N/A
Valley Drive Estates	Lexington Park	N/A	N/A
Complex	Location	Number of Bedrooms	Length of Leases
Villas at Greenview (townhouses)	Lexington Park	2-3	12 months
Apartments of Wildewood	California	1 – 2	6 or 12 months
Chancellors Run Apartments	Great Mills	N/A	N/A
Foxchase Village	Great Mills	2	1 month
Greenview Village Townhomes	Great Mills	2 – 3	1 month
Hickory Hills Townhomes	Great Mills	Studio - 3	1, 3, 6 or 12 months
Hunting Meadows Apartments	Callaway	N/A	N/A
Breton Bay	Leonardtown	N/A	N/A
Cedar Lane Apartments	Leonardtown	N/A	N/A
Leonardtown Village Apartments	Leonardtown	N/A	N/A
New Towne Village	Leonardtown	N/A	N/A
Subtotals	28 complexes	N/A	N/A
Totals	33 complexes	N/A	N/A

Table 2.5-22— Apartment and Townhouse Complexes in Calvert County and St. Mary's County
(Page 2 of 2)

Note:
N/A = not available
References:
Apartments, 2007

Table 2.5-23— Hotels, Motels, and Bed & Breakfasts Within About 30 Miles (48.2 km) of Lusby, Maryland
(Page 1 of 2)

Hotel/Motel, Bed and Breakfast	Location or Area	Distance from Lusby (mi)	Number of Units	Occupancy Constraints	
				50-79 Percent Occupancy	80 Percent or More Occupancy
Calvert County:					
Holiday Inn Select Solomons Hotel	Solomons	5.1	326	Dec – Feb	March – Nov
Cliffs Motor Inn	St. Leonard	6.3	N/A	N/A	N/A
Comfort Inn - Beacon Marina	Solomons	6.7	60	N/A	N/A
Holiday Inn Express Prince Frederick	Prince Frederick	11.0	70	All year	--
Super 8 Motel	Prince Frederick	13.1	57	N/A	N/A
Comfort Suites	Prince Frederick		70	Sept - Dec	Jan – Aug
Chesapeake Beach Resort and Spa	Chesapeake Beach	19.7	72	N/A	N/A
Herrington Harbour Marinas	North Beach	31.3		N/A	N/A
Subtotals	8 facilities		655		
St. Mary's County:					
Sleep Inn & Suites Lexington Park/ Solomons	Lexington Park	8.0	81	N/A	Monday – Wednesday; seasonal data N/A
Super 8 Motel	Lexington Park	8.4	61	Sept – April	May – Aug
Extended Stay America Lexington Park-Pax River	Lexington Park	9.0	98	Sept – Feb	March – Aug
Hampton Inn Lexington Park	Lexington Park	9.2	111	Thurs – Sat all year	Monday – Wed all year
Fairfield Inn by Marriott Lexington Park – Patuxent Naval Station	Lexington Park	9.3	78	N/A	Monday – Wed all year
Days Inn	Lexington Park	14.5	165	Sept – March	April – Aug
Lore's Lodging	Lexington Park	15.1	N/A	N/A	N/A
Patuxent Inn	Lexington Park	15.1	120	Oct – Feb	March – Sept
The Victorian Candle Bed & Breakfast	Hollywood	15.5	8	N/A	N/A
Relax Inn	Leonardtown	17.3	N/A	N/A	N/A
Scheible's Motel	Ridge	28.5	N/A	N/A	N/A
Bard's Field Bed & Breakfast	Ridge	28.8		N/A	N/A
Woodlawn Bed & Breakfast	Ridge	28.5	5	N/A	N/A
Brome-Howard Inn	St. Mary's City	22.5	4	N/A	N/A
Nekadesh Farm Bed & Breakfast	Colton's Point	24.6	2	N/A	N/A

Table 2.5-23— Hotels, Motels, and Bed & Breakfasts Within About 30 Miles (48.2 km) of Lusby, Maryland
(Page 2 of 2)

Hotel/Motel, Bed and Breakfast	Location or Area	Distance from Lusby (mi)	Number of Units	Occupancy Constraints	
				50-79 Percent Occupancy	80 Percent or More Occupancy
St. Michael's Manor Bed & Breakfast	Scotland	28.3--	4	--	--
Subtotals	16 facilities		737	N/A	N/A
Charles County:					
Comfort Suites Waldorf	Waldorf	28.7	69	N/A	N/A
La Quinta Inn Waldorf	Waldorf	28.7	87	Nov – Jan	Feb - Oct
Holiday Inn	Waldorf	36.6	191	N/A	N/A
Country Inn & Suites	Waldorf	37.0	66	n/h	May – Oct
Sleep Inn	La Plata	38.3	69	N/A	N/A
Subtotals	5 facilities	--	482	--	--
Prince Georges County:					
Colony South Hotel & Conference Center	Clinton	32.7	195	--	All year
Hampton Inn Easton	Easton	32.8	74	June – Nov	n/h
Subtotals	2 facilities	N/A	269	N/A	N/A
Totals	31 facilities	--	2,143	N/A	--

Notes:

N/A = not available

n/h = new hotel/motel, additional information is not available for the remainder of the year

Hotels, motels, and bed and breakfasts located within Dorchester County within the 30-linear mile radius of Lusby are excluded from this table because they are not on the peninsula and the actual driving miles would be too extensive for potential commuting to the CCNPP site.

References:

Calvert County, MD Visitors Guide website

St. Mary's County, MD Travel and Tourism website

Table 2.5-24— Public Schools Located in Calvert County and St. Mary's County

(Page 1 of 2)

Public School District / Schools	City or Location	Grades Taught	Number of Students	Students per FTE Teacher
Calvert County SD:				
Appeal Elementary School	Lusby	3-5	424	15
Beach Elementary School	Chesapeake Beach	PK-5	529	17
Calvert Career Center	Prince Frederick			
Calvert Country School	Prince Frederick	PK-12	76	5
Calvert Elementary School	Prince Frederick	PK-5	633	16
Calvert Middle School	Prince Frederick	6-8	503	15
Calvert High School	Prince Frederick	9-12	1,168	16
Dowell Elementary School	Lusby	PK-5	654	17
Huntingtown Elementary School	Huntingtown	PK-5	717	17
Huntingtown High School	Huntingtown	9-12	1,404	19
Mill Creek Middle School	Lusby	6-8	680	16
Mt. Harmony Elementary School	Owings	K-5	703	19
Mutual Elementary School	Port Republic	PK-5	648	16
Northern Middle School	Owings	6-8	783	17
Northern High School	Owings	9-12	1,565	19
Patuxent Elementary School	Lusby	PK-2	531	18
Patuxent High School	Lusby	9-12	1,490	20
Plum Point Elementary School	Huntingtown	K-5	786	19
Plum Point Middle School	Huntingtown	6-8	792	17
St. Leonard Elementary School	St. Leonard	PK-5	762	20
Southern Middle School	Lusby	6-8	662	15
Sunderland Elementary School	Sunderland	K-5	479	17
Windy Hill Elementary School	Owings	PK-5	695	18
Windy Hill Middle School	Owings	6-8	747	17
Subtotals	24 facilities		17,431	
St. Mary's County SD:				
Benjamin Banneker Elementary School	Loveville	PK-5	722	15
Chopticon High School	Morganza	9-12	1,710	20
Dr. James A. Forrest Career and Technology Center	Leonardtown			
Dynard Elementary School	Chaptico	PK-5	469	18
Esperanza Middle School	Lexington Park	6-8	877	15
George Washington Carver Elementary School	Great Mills	PK-5	355	14
Great Mills High School	Great Mills	9-12	1,681	19
Green Holly Elementary School	Lexington Park	PK-5	626	11
Greenview Knolls Elementary School	Great Mills	PK-5	501	18
Hollywood Elementary School	Hollywood	PK-5	646	17

Table 2.5-24— Public Schools Located in Calvert County and St. Mary's County

(Page 2 of 2)

Public School District / Schools	City or Location	Grades Taught	Number of Students	Students per FTE Teacher
Leonardtown Elementary School	Leonardtown	PK-5	554	20
Leonardtown High School	Leonardtown	9-12	1,796	21
Leonardtown Middle School	Leonardtown	6-8	1,020	17
Lettie Marshall Dent Elementary School	Mechanicsville	PK-5	522	17
Lexington Park Elementary School	Lexington Park	PK-5	509	15
Margaret Brent Middle School	Helen	6-8	889	16
Mechanicsville Elementary School	Mechanicsville	PK-5	339	20
Oakville Elementary School	Mechanicsville	PK-5	443	19
Park Hall Elementary School	Park Hall	PK-5	525	17
Piney Point Elementary School	Tall Timbers	PK-5	600	18
Ridge Elementary School	Ridge	PK-5	302	17
Spring Ridge Middle School	Lexington Park	6-8	897	16
St. Mary's County Alternative Learning Center	Leonardtown	7-11	52	5
Town Creek Elementary School	Lexington Park	PK-5	277	16
White Marsh Elementary School	Mechanicsville	K-5	240	17
White Oak Secondary Center	Great Mills			
Subtotals	27 facilities		16,552	
Totals	51 facilities		33,983	

Notes:

FTE = full-time equivalent

K = kindergarten

PK = pre-kindergarten

SD = School District

References:

CCSD, 2007

SMCPS, 2007

GS, 2007

Table 2.5-25— Private Schools Located in Calvert County and St. Mary's County

(Page 1 of 2)

County / Private School	City or Location	Grades Taught	Number of Students	Students per FTE Teacher
Calvert County:				
Cardinal Hickey Academy	Owings	K-8	226	12
Chesapeake Montessori Ltd.	Huntingtown	PK-4	52	6
Kinds Landing Academy	Huntingtown	1-12	34	9
Mount Harmony Children's Shelter	Owings	2-8	7	7
Our Lady Star of the Sea School	Solomons	K-8	199	18
Shiloh Christian Academy	Owings	PK-12	64	7
The Calverton School	Huntingtown	PK-12	410	9
The Tidewater School	Huntingtown	PK-5	59	11
Subtotals	8 schools		1,051	
St. Mary's County:				
Bay Montessori	Lexington Park	1-6	121	20
Clover Hill Mennonite School	Leonardtown	1-8	17	17
Father Andrew White SJ School	Leonardtown	PK-8	267	18
Friendship School	Mechanicsville	1-7	30	15
Gospel Light Baptist Academy	Mechanicsville	K-8	n/a	n/a
Holy Angels Sacred Heart School	Avenue	PK-8	99	10
Honey MacCallum Christian Preschool	California	PK-K	65	15
Leonard Hall Junior Naval Academy	Leonardtown	6-12	94	8
Lexington Park Baptist Preschool	Lexington Park	PK-K	80	14
Little Flower School	Great Mills	PK-8	276	16
Loveville Mennonite School	Leonardtown	1-8	43	22
Mechanicsville Mennonite Christian	Leonardtown	1-10	N/A	N/A
Mechanicsville Mennonite School	Leonardtown	1-10	N/A	8
Mother Catherine Spalding School	Helen	PK-8	194	15
Ryceville School	Mechanicsville	1-7	31	31
St. John's Elementary School	Hollywood	K-8	214	15
St. Mary's Ryken High School	Leonardtown	9-12	641	N/A

Table 2.5-25— Private Schools Located in Calvert County and St. Mary's County

(Page 2 of 2)

County / Private School	City or Location	Grades Taught	Number of Students	Students per FTE Teacher
St. Michaels School	Ridge	K-8	170	14
Starmaker Learning Center	California	PK-5	62	8
Sunny Meadow Amish School	Mechanicsville	1-8	N/A	N/A
The Creative Beginnings School	California	K	15	25
The King's Christian Academy	Callaway	K-12	257	17
Victory Baptist Academy	Charlotte Hall	1-11	59	8
Woodburn Hill School	Mechanicsville	1-8	28	28
Woodside Amish School	Mechanicsville	1-8	N/A	N/A
Subtotals	25 schools		2,763	
Totals	33 schools		3,814	

Notes:

FTE = full-time equivalent

K = kindergarten

PK = pre-kindergarten

N/A= Not available. Private schools are not required to release additional data and, thus, some data is not available.

References:

GS, 2007

Table 2.5-26— Boat Ramps and Public Landing/Launch Sites in Calvert County and St. Mary's County, Roughly from Closest to Farthest from the CCNPP Site

County/ Facility	Location	Availability of Boat Ramps
Calvert County:		
Hallowing Point Boat Ramp	Prince Frederick	Yes
Solomons Public Boat Ramp and Fishing/Crabbing Pier	Solomons	Yes
Nans Cove	Broomes Island	Canoes only
Kings Landing Park	Huntingtown	Canoes only
Subtotal	4 facilities	
St. Mary's County:		
Clarke's Landing	Hollywood	Yes
Forrest Landing	Hollywood	Yes
Abell's Wharf	Leonardtown	Yes
Camp Calvert Landing	Leonardtown	Canoes only
Paul Ellis Landing	Avenue	Piers only
River Springs Landing	Avenue	Piers only
Bushwood Wharf	Bushwood	Yes
Chaptico Wharf	Maddox	Yes
Wicomico Shores Landing	Chaptico	Yes
Tall Timbers Landing	Tall Timbers	Piers only
Piney Point Landing	Piney Point	Yes
St. George Creek/Potomac River	Piney Point	1
St. George Island Landing	St. George Island	Piers only
St. Mary's Lake	St. Mary's Lake	2
St. Inigoes Landing	St. Inigoes	Yes
St. Mary's River/Smith Creek	St. Inigoes	1
Fresh Pond Neck Landing	Ridge	Canoes only
Fox Harbor Landing	Wynne	Piers only
Subtotal	18 facilities	
Totals	22 facilities	

References:

DB, 2007

CCDED, 2007b

SMCDT, 2007

Table 2.5-27— Marinas in Calvert County and St. Mary's County, Roughly from Closest to Farthest from the CCNPP Site

(Page 1 of 2)

County / Marina	City or Location	Annual Dockage/Transients	Mean Water Level, feet
Calvert County:			
KB Derr & Son Marina	Lusby	100	4 ft
Vera's White Sands Marina	Lusby	100	15 ft
Flag Harbor Yacht Haven	St. Leonard	168	7 ft
Broomes Island Marina	Broomes Island	40	5.5 ft
Beacon Marina	Solomons	186	6 ft
Calvert Marina	Solomons	450	10 ft
Harbor Island Marina, Inc.	Solomons	115	12 ft
Hospitality Harbor Marina	Solomons	75	8 ft
Spring Cove Marina	Solomons	250	15 ft
Solomons Yachting Center	Solomons	100	12 ft
Zahniser's Yachting Center	Solomons	300	15 ft
Abner's Marina	Chesapeake Beach	100	6 ft
Breezy Point Marina	Chesapeake Beach	225	4.5 ft
Rod 'N Reel Dock	Chesapeake Beach	125	5 – 6 ft
Rod 'N Reel Marina West	Chesapeake Beach	88	5 – 6 ft
Subtotals	15 marinas	2,422	N/A
St. Mary's County:			
Boatel California	California	N/A	N/A
Blackstone Marina	Hollywood	N/A	N/A
Week's Marina	Hollywood	N/A	N/A
Combs Creek Marina	Leonardtown	N/A	N/A
Cape St. Mary's Marina, Inc.	Mechanicsville	N/A	N/A
Lindy's Marina	Avenue	N/A	N/A
St. Patrick's Creek Marina	Abell	N/A	N/A
Cather Marine, Inc.	Colton's Point	N/A	N/A
Colton's Point Marina	Colton's Point	N/A	N/A
Cedar Cove Marina	Valley Lee	N/A	N/A
Dennis Point Marina	Drayden	N/A	N/A
Feldman's Marine Railways	Drayden	N/A	N/A
St. Mary's Yachting Center	Drayden	N/A	N/A
Tall Timbers Marina	Tall Timbers	N/A	N/A
Curly's Point Marina	Piney Point	N/A	N/A
Haskell's Marina	Piney Point	N/A	N/A
Buzz's Marina	Ridge	N/A	N/A
Drury's Marina	Ridge	N/A	N/A
Phil's Marina	Ridge	N/A	N/A
Point Lookout Marina	Ridge	N/A	N/A
Rick's Marine	Scotland	N/A	N/A

Table 2.5-27— Marinas in Calvert County and St. Mary's County, Roughly from Closest to Farthest from the CCNPP Site
(Page 2 of 2)

County / Marina	City or Location	Annual Dockage/Transients	Mean Water Level, feet
Subtotals	21 marinas	N/A	N/A
Totals	36 marinas	N/A	N/A

Notes:

N/A = not applicable

References:

CC, 2007

CCDED, 2007b

SMCTT, 2007

SMCDT, 2007

Table 2.5-28— Charter Boat Services/Associations in Calvert County and St. Mary's County, Roughly from Closest to Farthest from the CCNPP Site

(Page 1 of 2)

County/Service	Location	Number of Boats
Calvert County:		
Bay Paddlers	Chesapeake Beach	N/A
Breezy Point Charter Boat Association	Chesapeake Beach	N/A
Chesapeake Beach Fishing Charters	Chesapeake Beach	15
Rod-N-Reel Charter Captains	Chesapeake Beach	25
Bunky's Charter Boats	Solomons	N/A
Calvert Marina Charter Dock	Solomons	16
Solomons Charter Captains Association	Solomons	40
St. Mary's County:		
Brady Bounds	Lexington Park	N/A
Mark Bowes	Leonardtwn	N/A
John Guy	Leonardtwn	N/A
Bob Holden	Leonardtwn	N/A
James Sommerville	Loveville	N/A
Pete Ide	Callaway	N/A
Matt Bowes	Valley Lee	N/A
Joe Scrivener	Valley Lee	N/A
Mopey Barber	Tall Timbers	N/A
Bob Bowes	Tall Timbers	N/A
Mark Miller	Tall Timbers	N/A
Jeff Swanson	Tall Timbers	N/A
Jeff Pharis	Piney Point	N/A
Stan Harris	St. Inigoes	N/A
Phil Langley, Jr.	Dameron	N/A
Charles Nicholson	Dameron	N/A
David Bradburn	Ridge	N/A
Joseph Bryan	Ridge	N/A
Butch Cornelius	Ridge	N/A
Eddie Davis	Ridge	N/A
Steve Davis	Ridge	N/A
Greg Drury	Ridge	N/A
James Gray	Ridge	N/A
Craig Kelly	Ridge	N/A
Clayton Lore & Joseph Lore, II	Ridge	N/A
Greg Madjeski	Ridge	N/A
Jason McLaughlin	Ridge	N/A
Dave Norris	Ridge	N/A
Steve & Mike Owens	Ridge	N/A
Dave Norris	Ridge	N/A

Table 2.5-28— Charter Boat Services/Associations in Calvert County and St. Mary's County, Roughly from Closest to Farthest from the CCNPP Site

(Page 2 of 2)

County/Service	Location	Number of Boats
Steve & Mike Owens	Ridge	N/A
Randy Powers	Ridge	N/A
Scott Russell	Ridge	N/A
Gary Sacks	Ridge	N/A
Bruce Scheible	Ridge	N/A
Jim Van Reenen	Ridge	N/A
Darryl Gay	Scotland	N/A

Note:

Charter boat information for Calvert County was available by boat association whereas information for St. Mary's County was available by individual boat captain.

N/A = not available

References:

CCDED, 2007b

SMCDT, 2007

Table 2.5-29— Campgrounds and RV Parks Within About 30 Miles (48.3 km) of Lusby, Maryland

Campground/RV Park	Location or Area	Spaces	Distance from Lusby (mi)
Calvert County:			
Breezy Point Beach & Campground	Chesapeake Beach	80	N/A
Patuxent Camp Sites	St. Leonard	75	11.6
Subtotals	2 facilities	155	N/A
St. Mary's County:			
Take It Easy Campground	Callaway	264	18.5
St. Mary's Yachting Center (formerly Dennis Point)	Drayden	100	N/A
Dennis Point Campground	Drayden	75	24.9
Seaside View Park and Campground	Ridge	N/A	26.7
Camp Merryelande Vacation Cottages	Piney Point	49	28.3
Point Lookout State Park	Scotland	143	31.2
Subtotals	6 facilities	631	N/A
Charles County:			
Aqualand on the Potomac Campground	Newburg	98	44.4
Totals	9 facilities	1,515	N/A

Notes:

N/A = not available

Campgrounds within Dorchester County within the 30-linear mile radius of Lusby are excluded from this table because they are not on the peninsula and the actual driving miles would be too extensive for potential commuting to the CCNPP site.

References:

GC, 2007

CCDED, 2007a

SMCDT, 2007

Table 2.5-30— Property and Income Tax Rates in Calvert County and St. Mary's County, 2006

Type of Tax, 2006	County	
	Calvert	St. Mary's
Property Taxes, per \$100 valuation:		
Real Property	0.892%	0.872%
Personal Property	2.23	N/A
Utility Property	22.3	N/A
Effective Rate	3.122	N/A
Income Tax:	2.80%	3.00%
References: MD, 2007		

Table 2.5-31 — Fiscal Year 2005 Actual County Revenues and Expenditures in Calvert County and St. Mary's County (rounded, in 2005 million dollars)

(Page 1 of 2)

Type of Revenue/Expenditure	Calvert County		St. Mary's County	
	2005 million \$	Percent	2005 million \$	Percent
Revenues:				
Property Taxes	\$ 78.8	45.3 %	\$ 58.3	40.2 %
Income Taxes	54.4	31.2	54.1	37.3
Other Local Taxes	14.5	8.3	13.4	9.2
State Shared Taxes	5.3	3.0	6.2	4.3
Licenses & Permits	0.2	0.1	0.8	0.6
Intergovernmental	10.3	5.9	6.2	4.3
Charges for Services	3.5	2.0	4.7	3.2
Fines & Forfeitures	0.1	< 0.1	0.2	0.1
Miscellaneous	4.2	2.4	1.2	0.8
Other Financing Sources	2.8	1.6	0.0	0.0
Total Revenues	\$ 174.1	99.9 %	\$ 145.2	100.0 %
Operating Expenditures:				
County Commissioners/Admin.	0.3	0.4	0.9	1.3
Aging	1.4	1.7	1.7	2.4
Public Safety	4.0	4.8	3.3	4.7
State Attorney	1.1	1.3	1.9	2.7
County Attorney	0.6	0.7	0.4	0.6
Circuit & Orphan's Court	0.6	0.7	1.0	1.4
Sheriff & Corrections	12.0	14.4	17.8	25.1
Economic Development	0.9	1.1	2.3	3.2
Finance	1.3	1.6	1.1	1.6
Treasurer	0.3	0.4	0.3	0.4
Public Works & Transportation	7.6	9.1	13.6	19.2
Marcey Halfway House	n/a	n/a	0.4	0.6
Human Resources/Personnel	0.4	0.5	1.2	1.7
Land Use Planning/Zoning & Growth Management	2.2	2.6	2.0	2.8
Recreation & Parks	2.5	3.0	3.1	4.4
Natural Resources & Community Services/Resources	6.6	7.9		
Information Technology	1.4	1.7	1.7	2.4
Capital Projects	8.8	10.5	N/A	N/A
Pensions & Insurance	10.4	12.4	N/A	N/A
State & Other Agencies	5.4	6.5	2.2	3.1
College of Southern Maryland	1.9	2.3	2.1	3.0
Library	2.5	3.0	1.7	2.4
Debt Service & Other	10.2	12.2	12.1	17.1

Table 2.5-31— Fiscal Year 2005 Actual County Revenues and Expenditures in Calvert County and St. Mary's County (rounded, in 2005 million dollars)

(Page 2 of 2)

Type of Revenue/Expenditure	Calvert County		St. Mary's County	
	2005 million \$	Percent	2005 million \$	Percent
Subtotal Operating Expenditures	\$ 83.6	98.8 %	\$ 70.8	100.1%
Other Expenditures:				
Operating Transfers Out - Board Of Education	\$ 80.9	97.9 %	\$ 58.9	97.8 %
Operating Transfers Out - Other	1.7	2.1	1.4	2.3
Subtotal Other Expenditures	\$ 82.6	100.0 %	\$ 60.3	100.1 %
Total Operating and Other Expenditures	166.2	N/A	\$131.1	N/A

Notes:

N/A = not applicable

Percentages and numbers may total slightly more or less than the total due to rounding.

References:

CCBCC, 2005

SMCBCC, 2006

Table 2.5-32— Calvert County General Fund Revenues and County-wide Taxable Assessed Property Values, 2000 to 2005

Calvert County General Fund Revenue	Fiscal Year		
	2000	2001	2002
Total Revenues:	\$ 119,537,896	\$ 127,871,223	\$ 131,015,438
Total Taxes	106,816,325	112,063,431	114,167,126
Property Taxes (real and personal, levied)	66,287,086	64,521,905	63,182,466
Taxable Assessed Value (real property):	\$1,885,426,385	\$1,977,672,353	\$5,203,051,084
Calvert County General Fund Revenue	Fiscal year		
	2003	2004	2005
Total Revenues:	\$ 136,064,177	\$ 149,011,597	\$ 174,053,536
Total Taxes	120,210,329	133,860,495	153,049,038
Property Taxes (real and personal, levied)	66,188,158	71,093,332	78,790,203
Taxable Assessed Value (real property):	\$5,577,546,203	\$5,967,684,896	\$6,522,591,844
CCNPP Assessed Value	N/A	N/A	\$ 675,153,560

Notes:

As of FY 2002, real property taxes are assessed at the property's estimated actual value. Previously, real property taxes were assessed at 40% of the property's estimated real value. Reflects decreases in assessment due to tax reform related to electric deregulation. A 50% exemption was given on assets used in the generation of electricity. This exemption was phased in over two years.

N/A = not available

References:

CCBCC, 2005

Table 2.5-33— Water Districts/Systems in Calvert County and St. Mary's County

(Page 1 of 2)

County / Water System	Number of Accounts	Capacity (gals/day)	Level of Use	
			Gallons/day	Percentage
Calvert County:				
Cavalier County	134	216,000	45,000	20.8 %
Chesapeake Beach	3,500	335,000	290,000	86.6
Chesapeake Heights	283	216,000	55,000	25.5
Chesapeake Lighthouse	134	N/A	1,000	N/A
Cross Point	141	N/A	3,000	N/A
Dares Beach	186	87,000	38,000	43.7
Hunting Hills	44	29,000	14,000	48.3
Industrial Park	34	N/A	2,000	N/A
Kenwood Beach	117	72,000	21,000	29.2
Lakewood	69	36,000	23,000	63.9
Marley Run	48	N/A	5,000	N/A
Mason Road	17	57,000	6,000	9.5
North Beach	2,000	432,000	166,000	38.4
Paris Oaks	89	32,000	13,000	40.6
Prince Frederick	1,029	288,000	117,000	40.6
Shores of Calvert	126	216,000	30,000	13.9
Solomons	976	900,000	225,000	25.0
St. Leonard	105	65,000	12,000	18.5
Summit/Highlands	259	860,000	40,000	4.7
Tara	24	N/A	2,000	N/A
Walnut Creek	56	N/A	2,000	N/A
White Sands	29	10,000	7,000	70.0
Subtotals – 22 Districts	9,400			
* St. Mary's County:				
Birch Manor	100	133,920	30,000	22.4
Breton Bay	359	648,000	107,700	16.6
Cedar Cove	445	540,000	133,500	24.7
Charlotte Hall/McKay	N/A	293,760	N/A	N/A
Country Lakes	1,074	1,869,480	322,200	17.2
Fenwick Manor	83	97,200	249,000	25.6
Forest Farms	N/A	N/A	N/A	N/A
Fox Meadow	32	181,400	9,600	5.3
Greenbrier	140	648,000	420,000	65.0
Greenciew Knolls	340	316,440	102,000	32.2
Hearts Desire	N/A	N/A	N/A	N/A
Holland Forest	49	216,000	14,700	6.8
Hollywood	N/A	174,960	N/A	N/A

Table 2.5-33— Water Districts/Systems in Calvert County and St. Mary's County

(Page 2 of 2)

County / Water System	Number of Accounts	Capacity (gals/day)	Level of Use	
			Gallons/day	Percentage
Hunting Quarters	120	540,000	360,000	67.0
King & Kennedy	59	151,200	17,700	11.7
Laurel Ridge	307	228,960	92,100	40.2
Lexington Park	9,379	N/A	2,813,700	N/A
Mulberry South	20	86,400	6,000	6.9
Persimmon Hill	N/A	N/A	N/A	N/A
Piney Point	218	118,800	65,400	55.1
Piney Point Landings	58	N/A	17,400	N/A
Rolling Acres	307	172,800	92,100	53.3
Southgate	79	27,000	N/A	N/A
St. Clements Shores	219	124,200	65,700	52.9
Village of Leonardtown	N/A	N/A	N/A	N/A
Wicomico Shores	420	3,000,000	126,000	4.2
Wilderness Run	N/A	N/A	N/A	N/A
Subtotals – 25 Districts	13,808			
Totals – 49 Systems	23,208			

Note:

N/A = not available

Calvert County data is from 2003 - number of accounts equal to residential population served. St. Mary's County data is from 2003.

This table contains only water systems that are under the authority of the Utilities Bureau in the case of Calvert County and the St. Mary's Metropolitan Commission in the case of St. Mary's County.

* St. Mary's County "Level of Use" is equal to the number of occupied units x 300 gpd, (average usage per 1 unit according to the "St. Mary's County Metropolitan Commission Table of Equivalent Dwelling Units, Revised October 11, 2007")

(SMCMCEDU, 2007).

References:

CCWS, 2007

SMCMC, 2007

SMCMCGR, 2009

Table 2.5-34— Sewer Districts/Systems in Calvert County and St. Mary's County

County / Sewer System	Number of Accounts	Capacity (gals/day)	Level of Use	
			Gallons/day	Percentage
Calvert County:				
Calvert Cliffs Nuclear Power Plant	0	66,600	12,640	18.0
Chesapeake Beach Municipality	3,500	1,500,000	490,000	32.6
Industrial Park Water and Sewer	N/A	60,000	20,000	33.3
Marley Run Water and Sewer	N/A	15,000	6,000	40.0
Naval Research Facility Randle Cliffs	300	75,000	30,000	40.0
Northern High School	2,100	40,000	21,000	52.5
Prince Frederick Water and Sewer	435	750,000	400,000	53.3
Solomons Water and Sewer	3,500	700,000	400,000	57.1
Subtotals – 8 facilities	9,835			
St. Mary's County:				
Forest Farm	173	57,500	40,000	70.0
Marlay-Taylor	15,656	6,000,000	3,840,000	64.0
St. Clement's Shores	545	100,000	77,000	77.0
Wicomico Shores	462	141,000	137,000	97.0
Subtotals – 4 facilities	16,836			
Totals – 12 facilities	26,671			

Note:

N/A = not available

This table contains only water systems that are under the authority of the Utilities Bureau in the case of Calvert County and the St. Mary's Metropolitan Commission in the case of St. Mary's County.

* Data provided for St. Mary's County Sewer Systems is current data (2008).

References:

CCWS, 2007

SMCMC, 2007

SMCMCGR, 2009

SMCMCWN, 2009

Table 2.5-35— Fiscal Year 2005 Actual Law Enforcement Agency Staffing, Budgets, and Calls for Service in Calvert County and St. Mary's County

Department	Agency		
	Maryland State Troopers, Statewide	Calvert County	St. Mary's County
Law Enforcement Department:			
Staff (FTEs):			
Officers	1,516	92.4	N/A
Support/Other	723	13.2	N/A
Subtotals	2,239	105.6	N/A
Budget:			
Salaries	\$ 171.6	\$ 6.0	\$ 11.3
Other Expenses	\$ 114.1	0.9	0.5
Subtotals	\$ 285.7	\$ 6.9	\$ 11.8
Detention Facilities:			
Staff (FTEs):			
Officers	N/A	51.0	N/A
Support/Other	N/A	13.5	N/A
Subtotals	11,740	64.5	N/A
Budget:			
Salaries	N/A	\$ 3.3	N/A
Other Expenses	N/A	1.2	N/A
Subtotals	\$1.0	\$4.5	\$ 6.0
Inmate Population:			
Number of Inmates Received/Processed	N/A	2,917	2,545
Average Daily Population	26,748	222	292

Notes:

FTE = full-time equivalents

References:

SMCBCC, 2006

CCBCC, 2005

MDSP, 2007

Table 2.5-36— Fire/EMS Departments in Calvert County and St. Mary's County

County / Department	Location or Area	Type of Department	Number of Stations	Number of Firefighters / Other Staff	CY 2005 Calls
Calvert County:					
Calvert Advanced Life Support, Co. 10	N/A	Volunteer	N/A	N/A	3,781
Calvert Dive Rescue Team, Co. 12	N/A	Volunteer	N/A	N/A	21
Dunkirk VFD & RS, Co. 5	Dunkirk	Volunteer	1	75 / 15	1,794
Huntingtown VFD & RS, Co. 6	Huntingtown	Volunteer	1	60 / 6	2,057
North Beach VFD & RS, Co. 1	Chesapeake Beach	Volunteer	1	65 / 0	1,691
Prince Frederick VFD, Co. 2	Prince Frederick	Volunteer	1	55 / 10	937
Prince Frederick VRS, Co. 4	Prince Frederick	Volunteer	See Co. 2	See Co. 2	2,001
Saint Leonard VFD & RS, Co. 7	Saint Leonard	Volunteer	N/A	N/A	1,700
Solomons VRS & FD, Co. 3	Solomons	Volunteer	2	60 / 25	2,815
Subtotals			6	800 (315 / 56 *)	16,797
St. Mary's County:					
Department of Public Safety, Fire & Emergency Services	Patuxent River	Career – U.S. Department of Defense	3	66 / 11	N/A
Hollywood VFD	Hollywood	Volunteer	1	75 / 20	N/A
Leonardtwn VFD	Leonardtwn	Volunteer	1	59 / 15	N/A
Mechanicsville VFD, Inc.	Mechanicsville	Volunteer	2	110 / 20	N/A
Ridge VFD	Ridge	Volunteer	1	80 / 30	N/A
Seventh District VFD, Inc.	Avenue	Volunteer	1	32 / 0	N/A
Subtotals			9	737 / 152	N/A
Totals			15		

Notes:

Cop. = Company

CY = calendar year

FD = Fire Department

n/a = not available

RS = Rescue Squad

VFD = Volunteer Fire Department

VRS = Volunteer Rescue Squad

* = The public safety office and other sources note that there are over 800 volunteers staffing the fire/EMS departments in Calvert County. Thus, the staff levels for each department are only provided to illustrate the general distribution of staff.

References:

FD, 2007

CCDFB, 2005

Table 2.5-37— EMS Calls for Service in Calvert County and St. Mary's County, June 2005 to May 2006

County of Occurrence	County Where Injury Occurred	Patient's County of Residence	Number of Children Injured
Calvert County	132	175	27
St. Mary's County	147	119	29

References:
MIEMSS, 2006

Table 2.5-38— Peak Hour Traffic Volumes at Calvert Cliffs Parkway and MD 2/4

Before Labor Day (Late Aug 2006)					
	MD 2/4 NB	MD 2/4 SB	Site In	Site Out	Total
AM Peak Hour	1,252	1,048	82	14	2,396
PM Peak Hour	1,078	1,581	25	178	2,862
After Labor Day (Late September – Early October 2006)					
	MD 2/4 NB	MD 2/4 SB	Site In	Site Out	Total
AM Peak Hour	1,235	1,005	88	10	2,338
PM Peak Hour	1,104	1,412	37	204	2,757

References:
KLD, 2007

Table 2.5-39— Summary of Surveyed Architectural Resources

MHT No.	Name	Date	Resource Type	Location	Recommended NRHP Status
CT-58	Parran's Park	c1750	Abandoned Farmstead; 3 tobacco barns	In the APE	NRHP Eligible under Criterion A
CT-59	Preston's Cliff, Charles's Gift, The Wilson Farm	c1690	Ruins; 3 tobacco barns and house ruins	In the APE for visual effects	NRHP Eligible under Criteria A and C
CT-154	Calvert Cliffs Nuclear Power Plant	c1975	Nuclear Power Plant	In the APE and adjacent area	Not Eligible
CT-1295	Baltimore & Drum Point Railroad	c1890	Abandoned Railroad; railroad bed	In the APE	Offsite portions determined NRHP eligible; project portions NRHP Eligible under Criteria A and C
CT-1312	Camp Conoy	c1930	YMCA Camp; 6 buildings, 2 pavilions, playground, swimming pool, tennis courts	In the APE and adjacent area	NRHP Eligible under Criterion A

Notes:

MHT = Maryland Historical Trust

NRHP = National Register of Historic Places

References:

GAI, 2007

Table 2.5-40— Phase Ib Summary of Surveyed Archaeological Sites

(Page 1 of 2)

Site (MHT No.)	Dimensions feet (meters)	Artifacts (Hist.)	Artifacts (Prehist.)	Site Type	Age	Phase Ib Recommended NRHP Status	Phase Ib Recommendations
Site 1 (18CV474)	148 x 148 (45 x 45)	175	--	Artifact Scatter/ Foundation	19 th century	Potentially Eligible	Avoid/Phase II
Site 2 (18CV475)	49 x 49 (15 x 15)	17	--	Artifact Scatter/ Foundation	19 th century	Not eligible	No Further Work
Site 3 (18CV476)	82 x 26 (25 x 8)	4	--	Refuse Dump	20 th century/ Modern	Not eligible	No Further Work
Site 4 (18CV477)	148 x 449 (45 x 137)	102	--	Refuse Dump/ Outbuilding	Mid-late 20 th century	Not eligible	No Further Work
Site 5 (18CV478)	66 x 82 (20 x 25)	24	--	Artifact Scatter	20 th century	Not eligible	No Further Work
Site 6 (18CV479)	49 x 66 (15 x 20)	--	7	Lithic Scatter	Indeterminate Prehistoric	Not eligible	No Further Work
Site 7 (18CV480)	997 x 499 (304 x 152)	294	--	Domestic Site	Mid 19 th to 20 th century	Potentially Eligible	Avoid/Phase II
Site 8 (18CV481)	148 x 108 (45 x 33)	31	--	Domestic Site	19 th to early 20 th century	Potentially Eligible	Avoid/Phase II
Site 9 (18CV482)	148 x 98 (45 x 30)	64	--	Domestic Site	Mid 19 th to early 20 th century	Potentially Eligible	Avoid/Phase II
Site 10 (18CV483)	141 x 118 (43 x 36)	54	1	Domestic Site/ Artifact Scatter/ Lithic Findspot	Mid 19 th to 20 th century; Indeterminate Prehistoric	Not Eligible	No Further Work
Site 11 (18CV484)	318 x 39 (97 x 12)	12	--	Field Scatter	20 th century	Not eligible	No Further Work
Site 12 (18CV485)	16 x 33 (5 x 10)	5	--	Artifact Scatter	Mid 19 th to 20 th century	Not eligible	No Further Work
Site 13 (18CV486)	69 x 39 (21 x 12)	9	--	Artifact Scatter	19 th to 20 th century	Not eligible	No Further Work
Site 14 (18CV487)	115 x 33 (35 x 10)	7	--	Artifact Scatter	19 th century	Not eligible	No Further Work

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Table 2.5-40— Phase Ib Summary of Surveyed Archaeological Sites

(Page 2 of 2)

Site (MHT No.)	Dimensions feet (meters)	Artifacts (Hist.)	Artifacts (Prehist.)	Site Type	Age	Phase Ib Recommended NRHP Status	Phase Ib Recommendations
Site 15 (18Cv489)	148 x 295 (45 x 90)	83	--	Artifact Scatter	19 th to early 20 th century	Not eligible	No Further Work
Site 16 (18Cv490)	148 x 98 (45 x 30)	12	--	Artifact Scatter	20 th century	Not eligible	No Further Work
Site 17 (18Cv7)	250 x 530 (76 x 162)	143	1	Domestic Site	Early 19 th to 20 th century	Potentially eligible	No Further Work*

* MHT (February 13, 2009) concludes No Further Work based on reforestation of the area through hand-planting of seedlings. In the event that hand-planting of seedlings is not possible further consultation regarding potential impacts to the site will be necessary.

Notes:

NRHP = National Register of Historic Places

MHT = Maryland Historic Trust

References:

GAI, 2007

Table 2.5-41— Summary of Identified Isolated Finds

(Page 1 of 2)

IF	Setting	Landform	Age	NRHP Eligibility
IF 1	Upland	Ridge spur	Prehistoric	Not eligible
IF 2	Upland	Upland Flat	Prehistoric	Not eligible
IF 3	Upland	Bench	Prehistoric	Not eligible
IF 5	Upland	Side Slope	Prehistoric	Not eligible
IF 6	Upland	Ridge	Historic	Not eligible
IF 7	Upland	Broad Ridgetop	Historic	Not eligible
IF 8	Upland	Ridge Spur	Historic	Not eligible
IF 9	Upland	Saddle	Historic	Not eligible
IF 12	Upland	Saddle	Historic	Not eligible
IF 13	Upland	Bench	Historic	Not eligible
IF 14	Upland	Bench	Historic	Not eligible
IF 15	Upland	Bench	Historic	Not eligible
IF 16	Upland	Ridgetop	Historic	Not eligible
IF 17	Upland	Ridgetop	Historic	Not eligible
IF 18	Upland	Ridgetop	Historic	Not eligible
IF 19	Upland	Ridgetop	Historic	Not eligible
IF 20	Upland	Ridgetop	Historic	Not eligible
IF 21	Upland	Ridgetop	Historic	Not eligible
IF 22	Upland	Broad Ridgetop	Historic	Not eligible
IF 23	Upland	Broad Ridgetop	Historic	Not eligible
IF 24	Upland	Broad Ridgetop	Historic	Not eligible
IF 25	Upland	Ridgetop	Historic	Not eligible
IF 26	Upland	Broad Ridgetop	Historic	Not eligible
IF 27	Upland	Broad Ridgetop	Historic	Not eligible
IF 28	Upland	Broad Ridgetop	Historic	Not eligible
IF 29	Upland	Broad Ridgetop	Prehistoric	Not eligible
IF 30	Upland	Broad Ridgetop	Prehistoric/ Historic	Not eligible
IF 31	Upland	Broad Ridgetop	Prehistoric/ Historic	Not eligible
IF 32	Upland	Broad Ridgetop	Historic	Not eligible
IF 33	Upland	Broad Ridgetop	Historic	Not eligible
IF 34	Upland	Broad Ridgetop	Historic	Not eligible
IF 35	Upland	Broad Ridgetop	Historic	Not eligible
IF 36	Upland	Broad Ridgetop	Historic	Not eligible
IF 37	Upland	Broad Ridgetop	Prehistoric	Not eligible
IF 38	Upland	Broad Ridgetop	Prehistoric/ Historic	Not eligible
IF 39	Upland	Broad Ridgetop	Historic	Not eligible
IF 40	Upland	Broad Ridgetop	Historic	Not eligible

Table 2.5-41— Summary of Identified Isolated Finds

(Page 2 of 2)

IF	Setting	Landform	Age	NRHP Eligibility
----	---------	----------	-----	------------------

Notes:

IF numbers are not sequential (numbers 4, 10 and 11 do not appear).

IF = Isolated Find

NRHP = National Register of Historic Places

References:

GAI, 2007

Table 2.5-42— Summary of Phase II National Register Site Evaluations ^(a)

Site (MHT No.)	Site Type	Age	NRHP Status	Recommended Action
Site 1 (18CV474)	Domestic Site	Mid 19 th to early 20 th century	Eligible, Criterion C	Avoid/Phase III
Site 7 (18CV480)	Domestic Site	Mid 19 th to 20 th century	Not Eligible	No Further Work
Site 8 (18CV481)	Domestic Site	Late 19 th to early 20 th century	Not Eligible	No Further Work
Site 9 (18CV482)	Domestic Site	Late 19 th century	Not Eligible	No Further Work

Notes:

NRHP = National Register of Historic Places

MHT = Maryland Historic Trust

^(a) Based on Maryland SHPO comments (February 13, 2009)**References:**

MHT, 2007

Table 2.5-43— Summary of Eligible Architectural Resources ^(a)

MHT No.	Name	Date	Resource Type	Location	Recommended NRHP Status
CT-58	Parran's Park	c1750	Abandoned Farmstead; 3 tobacco barns	In the APE	NRHP Eligible under Criterion A
CT-59	Preston's Cliff, Charles's Gift, The Wilson Farm	c1690	Ruins; 3 tobacco barns and house ruins	In the APE for visual effects	NRHP Eligible under Criteria A and C
CT-1295	Baltimore and Drum Point Railroad	c1890	Abandoned Railroad; railroad bed	In the APE	Offsite portions determined NRHP eligible; project portions NRHP Eligible under Criteria A and C
CT-1312	Camp Conoy	c1930	YMCA Camp; 4 buildings, pavilion, playground, swimming pool, tennis courts	In the APE and adjacent area	NRHP Eligible under Criterion A

Notes:

NRHP = National Register of Historic Places

MHT = Maryland Historical Trust

^(a) Based on Maryland SHPO comments**References:**

MHT, 2007

Table 2.5-44— Census Block Groups within 50 mi (80 km) of the CCNPP Site with Minority and Low Income Populations

(Page 1 of 3)

State / County	Total Number of Census Block Groups	Number of Minority Census Block Groups								Number of Low Income Census Block Group
		Black	American Indian or Alaskan Native	Asian	Native Hawaiian or Other Pacific Islander	Some Other Race	Multi-Racial	Aggregate (Total)	Hispanic	
Maryland:										
Anne Arundel	240	13	0	0	0	0	0	16	2	5
Calvert	41	0	0	0	0	0	0	0	0	0
Caroline	21	1	0	0	0	0	0	1	0	0
Charles	76	6	0	0	0	0	0	10	0	0
Dorchester	30	4	0	0	0	0	0	5	0	2
Kent	5	0	0	0	0	0	0	0	0	0
Montgomery	49	7	0	2	0	6	0	32	16	0
Prince Georges	471	321	0	2	0	12	0	380	34	6
Queen Annes	18	0	0	0	0	0	0	0	0	0
St. Mary's	55	0	0	0	0	0	0	2	0	1
Somerset	19	5	0	0	0	0	0	5	0	4
Talbot	25	1	0	0	0	0	0	1	0	0
Wicomico	65	11	0	0	0	0	0	11	0	9
Worcester	1	0	0	0	0	0	0	0	0	0
Subtotal	1,116	369	0	4	0	18	0	463	52	27
Virginia:										
Accomack	2	0	0	0	0	0	0	0	0	0
Alexandria	99	9	0	1	0	3	0	33	11	0
Arlington	137	8	0	2	0	6	0	20	23	1
Caroline	3	1	0	0	0	0	0	1	0	1
Essex	9	4	0	0	0	0	0	2	0	0
Fairfax	219	7	0	12	0	4	0	38	25	0

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Table 2.5-44— Census Block Groups within 50 mi (80 km) of the CCNPP Site with Minority and Low Income Populations

(Page 2 of 3)

State / County	Total Number of Census Block Groups	Number of Minority Census Block Groups								Number of Low Income Census Block Group
		Black	American Indian or Alaskan Native	Asian	Native Hawaiian or Other Pacific Islander	Some Other Race	Multi-Racial	Aggregate (Total)	Hispanic	
Falls Church	3	0	0	0	0	0	0	0	0	0
King and Queen	1	1	0	0	0	0	0	0	0	0
King George	11	0	0	0	0	0	0	0	0	0
Lancaster	8	4	0	0	0	0	0	4	0	0
Middlesex	2	0	0	0	0	0	0	0	0	0
Northumberland	13	3	0	0	0	0	0	0	0	0
Prince William	69	4	0	0	0	1	0	10	5	0
Richmond	6	2	0	0	0	0	0	0	0	0
Stafford	7	0	0	0	0	0	0	0	0	0
Westmoreland	16	5	0	0	0	0	0	5	0	1
Subtotal	605	48	0	15	0	14	0	113	64	3
Washington, D.C.:	433	294	0	3	0	6	0	312	17	35
Delaware:										
Kent	1	0	0	0	0	0	0	0	0	0
Sussex	22	3	0	0	0	0	0	3	0	2
Subtotal	23	3	0	0	0	0	0	3	0	2
Total Census Block Groups	2,177	714	0	22	0	38	0	891	133	67

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Table 2.5-44— Census Block Groups within 50 mi (80 km) of the CCNPP Site with Minority and Low Income Populations

(Page 3 of 3)

State / County	Total Number of Census Block Groups	Number of Minority Census Block Groups							Number of Low Income Census Block Group
		Black	American Indian or Alaskan Native	Asian	Native Hawaiian or Other Pacific Islander	Some Other Race	Multi-Racial	Aggregate (Total)	

Notes:

- (1) A person of Hispanic/Latino origin may be of any race, and therefore may also be included in the aggregate racial minority percentage.
- (2) Calvert County and St. Mary's County are in the Region of Influence for socioeconomic impact analysis.

References:

- USCB, 2000a
- USCB, 2000b

Table 2.5-45— Census Block Groups and Percentages of Minority People Within 50 mi (80km) of the CCNPP Site

State / Area	Total Number of Census Block Groups	Aggregate (Total) Number of Minority Census Block Groups	African-Americans	Native Americans, Indians, or Alaskans	Asians	Native Hawaiians or Other Pacific Islanders	Some Other Race	Multi-Racial Persons	Aggregate (Total) of Racial Minorities	Percent of Ethnic Minority Hispanic/Latino
50-Mile Radius:										
Maryland	1,116	463	27.89%	0.29%	3.98%	0.04%	1.80%	1.96%	35.97%	4.30%
Virginia	605	113	19.64	0.30	3.69	0.06	1.96	2.02	27.67	4.66
Washington, D.C.	433	312	60.01	0.30	2.66	0.06	3.84	2.35	69.22	7.86
Delaware	23	3	19.23	0.35	2.07	0.04	2.02	1.66	25.37	4.76
Region of Influence:										
Calvert County, MD	41	0	13.11	0.30	0.88	0.03	0.49	1.27	16.08	1.52
St. Mary's County, MD	55	2	13.92	0.34	1.80	0.08	0.61	1.68	18.43	2.00
References: USCB, 2000a										

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Table 2.5-46— Census Block Groups and Percentage of Households within 50 mi (80 km) of the CCNPP Site with Low Income Populations

State / Area	Total Number of Census Block Groups	Number of Low Income Census Block Groups	Percentage of Low Income Households in Census Block Groups
50-Mile Radius:			
Maryland	1,116	27	8.32%
Virginia	605	3	9.61
Washington, D.C.	433	35	17.11
Delaware	23	2	8.75
Total	2,177	67	N/A
Region of Influence:			
Calvert County, MD	41	0	4.11
St. Mary's County, MD	55	1	6.75
Total	96	1	N/A
References: USCB, 2000b			

Table 2.5-47— Estimated Chesapeake Bay Recreational Catches in Metric Tons, Maryland and Virginia Combined, 1995 and 2000

Fish	Commercial Catches (mt)		Recreational Catches (mt)	
	1995	2000	1995	2000
American Eel	323.6	249.8	NR	NR
Atlantic Croaker	3,420.5	6,527.7	1,487.5	3,429.4
Atlantic Menhaden	319,535.3	168,738.9	NR	NR
Atlantic Sturgeon	N/A	N/A	N/A	N/A
Black Drum	32.5	28.4	77.0	7.8
Black Sea Bass*	34,812.8	22,788.5	NR	NR
Blue Crab*	34,812.8	22,788.5	NR	NR
Bluefish	292.7	279.9	245.6	216.8
Eastern Oyster	723.9	1,148.2	NR	NR
Horseshoe Crab	9.3	375.2	NR	NR
Mackerels	80.1	89.5	281.7	47.1
Red Drum	1.4	5.6	30.1	43.4
Shad/River herring	182.7	175.3	NR	NR
Spotted Seatrout	13.1	18.2	81.6	88.7
Striped Bass	896.7	2,229.0	1,366.8	1,862.7
Summer Flounder	1,582.0	1,001.0	557.1	773.3
Tautog	15.6	8.5	330.8	110.9
Weakfish	705.1	712.7	156.9	531.4

Notes:

* = the report gives identical catch levels for these two species, indicating that there is likely an error in the report. Rather than exclude the information, it is presented here assuming that the values are true for one of the species.

mt = metric tons

NR = not reported

n/a = not available

References:

CFEPTAP, 2004

Table 2.5-48— Chesapeake Bay Recreational Top Five Species Most Commonly Caught and Consumed Fish, Lower Patapsco and Back Rivers, in the Baltimore Region, Maryland, 2004

Sample Site / Type of Fish	Fish Caught and Consumed	
	Number	Percentage
Back River Sites:		
White Perch	9	27.3%
Striped Bass/Rockfish	8	24.2
Catfish (all)	3	9.1
Perched (unspecified)	3	9.1
All Others	10	30.3
Subtotal	33	100.0%
Baltimore Harbor/Patapsco River Sites:		
Striped Bass/Rockfish	33	28.9%
White Perch	23	20.2
Blue Crab/Crab	19	16.7
Catfish (all)	11	9.6
Croaker	7	6.1
All Others	21	18.4
Subtotal	114	99.9%
Combined Sites:		
White Perch	32	21.8%
Striped Bass/Rockfish	41	27.9
Blue Crab/Crab	19	12.9
Catfish (all)	14	9.5
Croaker	7	4.8
Perched (unspecified)	3	2.0
All Others	31	21.0
Total	147	99.9%

Note:

Numbers may not total 100 percent due to rounding.

References:

GM, 2005

Table 2.5-49— Chesapeake Bay Recreational Top Five Species Most Commonly Caught and Consumed Fish, Lower Potomac and Anacostia Rivers, in the Washington, D.C. Region, 2004

Type of Fish	Fish Caught and Consumed	
	Number	Percentage
Catfish (all)	59	29.2%
Striped Bass/Rockfish	35	17.3
Largemouth Bass	22	10.9
Crappie	20	9.9
Bluegill	18	8.9
All Others	48	23.8
Total	202	100.0%

References:
GM, 2005

Table 2.5-50— Chesapeake Bay Recreational Top Ten Species Most Commonly Caught and Consumed Fish, Elizabeth and James Rivers, in the Tidewater Region, Virginia, 2004

Type of Fish	Fish Caught and Consumed	
	Number	Percentage
Croaker	367	38.1%
Spot	186	19.3
Flounder	117	12.2
Striped Bass/Rockfish	76	7.9
Blue Crab	60	6.2
Trout	53	5.5
Catfish (all)	31	3.2
Crabs (unspecified)	14	1.5
Drum	12	1.2
Bluefish	9	0.9
All Others	37	3.8
Total	962	99.8%

Note:

Numbers may not total 100 percent due to rounding.

References:

GM, 2005

Table 2.5-51— Chesapeake Bay Recreational Fishing Characteristics for Minority Populations, Lower Patapsco and Back Rivers, in the Baltimore Region, Maryland, 2004

Fishing Characteristics	Ethnicity / Percentages				
	Caucasians	African-Americans	Asians*	Hispanics/Latinos*	Native Americans*
Study Sample Sizes (number / percent) – 135:	82 / 64%	43 / 33%	0 / 0%	1 / 0.7%	3 / 2%
Fishing Mode:					
Shore/Pier	79%	100%	N/A	N/A	N/A
Boat	21	0	N/A	N/A	N/A
Total	100%	100%	N/A	N/A	N/A
Distance Traveled to Fish:					
Less than 10 mi (16.1 km)	85	67	N/A	N/A	N/A
25 miles or less (40.2 km)	99	97	N/A	N/A	N/A
Consumption Over Past Year:					
Striped Bass/Rockfish	27%	10%	N/A	N/A	N/A
White Perch	13	17	N/A	N/A	N/A
Blue Crab/Crab	11	9	N/A	N/A	N/A
Catfish (all)	7	7	N/A	N/A	N/A
All Others	5	3	N/A	N/A	N/A
Total	63%	46%	N/A	N/A	N/A
Importance (Very and Somewhat) of Subsistence for:					
Fresh Fish for Dinner	54	65	N/A	N/A	N/A
To Reduce Food Expenses	17	44	N/A	N/A	N/A
Consume Fish Caught:	45	65	N/A	N/A	N/A
Reasons for Non-consumption:					
Water too polluted	43	23	N/A	N/A	N/A
Fish advisories	17	7	N/A	N/A	N/A

Note:

N/A = not available

*The samples sizes are too small to draw conclusions for these subgroups, so detailed analyses either were not conduct for all ethnic groups, or conclusions should not be drawn from any percentages presented.

References:

GM, 2005

Table 2.5-52— Chesapeake Bay Recreational Fishing Characteristics for Minority Populations, Lower Potomac and Anacostia Rivers, in the Washington, D.C. Region, 2004

Fishing Characteristics	Ethnicity / Percentages				
	Caucasians	African-Americans	Asians	Hispanics/Latinos	Others*
Study Sample Sizes (number / percent) - 247:	79 / 32.0%	121 / 49.0%	14 / 5.7%	23 / 9.3%	10 / 4.0%
Fishing Mode:					
Shore/Pier	35%	96%	86%	100%	60%
Boat	65	4	14	0	40
Total	100%	100%	100%	100%	100%
Distance Traveled to Fish:					
Less than 10 mi (16.1 km)	54	83	64	48	n/a
Less than 25 mi (40.2 km)	> 75%	> 83%	> 75%	> 75%	> 75%
Fishing More than 50 Times Last Year:	17	25	14	N/A	N/A
Importance (Very only) of Subsistence for:					
Fresh Fish for Dinner	11	24	23	39	20
To Reduce Food Expenses	13	12	0	26	0
Consume Fish Caught:	30	36	64	43	40
Reasons for Non-consumption:					
Water too polluted	51	37	31	38	N/A
Fish advisories	4	8	0	5	N/A

Note:

N/A = not available

*The samples sizes are too small to draw conclusions for these subgroups, so detailed analyses either were not conduct for all ethnic groups, or conclusions should not be drawn from any percentages presented.

References:

GM, 2005

Table 2.5-53— Chesapeake Bay Recreational Fishing Characteristics for Minority Populations, Elizabeth and James Rivers, in the Tidewater Region, Virginia, 2004

Fishing Characteristics	Ethnicity / Percentages				
	Caucasians	African-Americans	Asians*	Hispanics / Latinos*	Native Americans*
Study Sample Sizes (number / percent) – 493:	277 / 56%	207 / 42%	1 / 0.2%	5 / 1%	4 / 0.8%
Fishing Mode:					
Shore	13%	11%	N/A	N/A	N/A
Pier	25	60	N/A	N/A	N/A
Boat	61	28	N/A	N/A	N/A
Total	99%	99%	N/A	N/A	N/A
Distance Traveled to Fish:					
Less than 10 mi (16.1 km)	44	48	N/A	N/A	N/A
Greater than 100 mi (160.1 km)	25	26	N/A	N/A	N/A
Number of Times Fished Last Year:					
			N/A	N/A	N/A
Importance of Subsistence for:					
Fresh Fish for Dinner					
Very Important	47%	53%	N/A	20%	75%
Somewhat Important	32	26	N/A	40	0
Subtotal	79%	79%	N/A	60%	75%
To Reduce Food Expenses					
Very Important	14%	26	N/A	20%	25%
Somewhat Important	20	26	N/A	20	0
Subtotal	34%	52%	N/A	40%	25%
Consume Fish Caught:	90	94	N/A	80	100
Reasons for Non-consumption:					
Water too polluted	N/A	N/A	N/A	N/A	N/A
Fish advisories	N/A	N/A	N/A	N/A	N/A

Note:

N/A = not available

The samples sizes are too small to draw conclusions for these subgroups, so detailed analyses either were not conduct for all ethnic groups, or conclusions should not be drawn from any percentages presented.

References:

GM, 2005

Table 2.5-54— Chesapeake Bay Recreational Fishing Characteristics for Low Income Populations, Lower Potomac and Anacostia Rivers, in the Washington, D.C. Region, 2004

Fishing Characteristics	Annual Household Income Levels / Percentages			
	\$20,000 or Less	\$20,001 - \$40,000	\$40,001 - \$80,000	\$80,001 or More
Study Sample Sizes (number / percent) - 247:	9%	22%	31%	39%
Fishing Mode:				
Shore/Pier	100%	N/A	N/A	49%
Boat	0	N/A	N/A	51
Total	100%	N/A	N/A	100%
Distance Traveled to Fish:				
Less than 10 mi (16.1 km)	N/A	85% (\$40K or less)	62% (\$40K or more)	N/A
Number of Times Fished Last Year:				
	N/A	N/A	N/A	N/A
Importance (Very only) of Subsistence for:				
Fresh Fish for Dinner	N/A	N/A	N/A	N/A
To Reduce Food Expenses	N/A	17% (\$40K or less)	3% (\$40K or more)	N/A
Consume Fish Caught:				
	30	46	36	33
Reasons for Non-consumption:				
Water too polluted	N/A	N/A	N/A	N/A
Fish advisories	N/A	N/A	N/A	N/A

Note:

N/A = not available

References:

GM, 2005

Table 2.5-55— Chesapeake Bay Recreational Fishing Characteristics for Low Income Populations, Elizabeth and James Rivers, in the Tidewater Region, Virginia, 2004

Fishing Characteristics	Annual Household Income Levels / Percentages			
	\$20,000 or Less	\$20,001 - \$40,000	\$40,001 - \$80,000	\$80,001 or More
Study Sample Sizes (number / percent) – 493:	44 / 9%	138 / 28%	202 / 41%	109 / 22%
Fishing Mode:				
Shore	18%	13%	13%	12%
Pier	51	46	40	28
Boat	31	40	46	60
Total	100%	99%	99%	100%
Distance Traveled to Fish:				
Less than 10 mi (16.1 km)	N/A	N/A	N/A	N/A
Less than 25 mi (40.2 km)	N/A	N/A	N/A	N/A
Number of Times Fished Last Year:	N/A	N/A	N/A	N/A
Importance (Very only) of Subsistence for:	N/A	N/A	N/A	N/A
Fresh Fish for Dinner	64	56	50	38
To Reduce Food Expenses	41	29	14	11
Consume Fish Caught:				
Reasons for Non-consumption:				
Water too polluted				
Fish advisories				

Note:

N/A = not available

References:

GM, 2005

Figure 2.5-1— CCNPP Site 50 mi (80 km) Vicinity

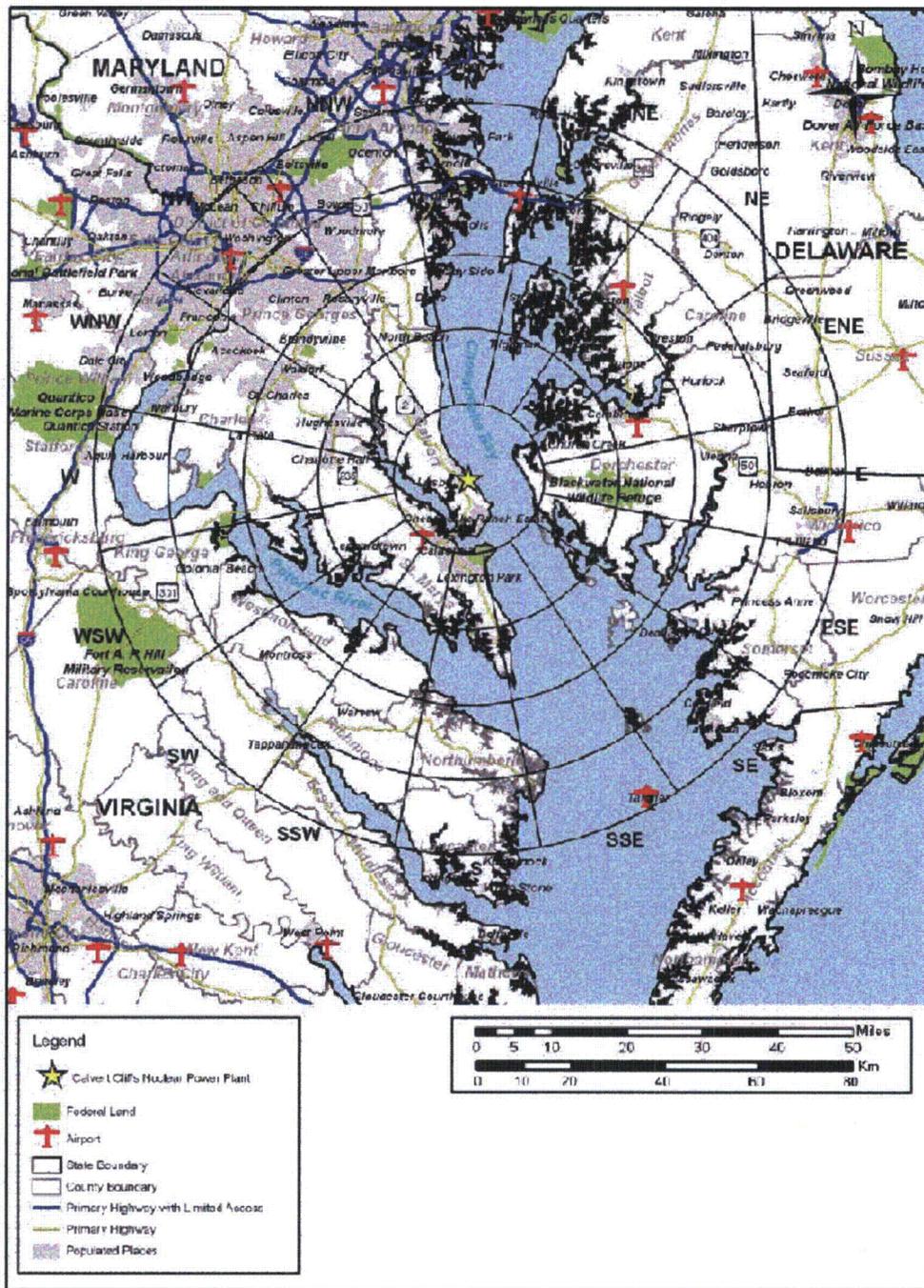
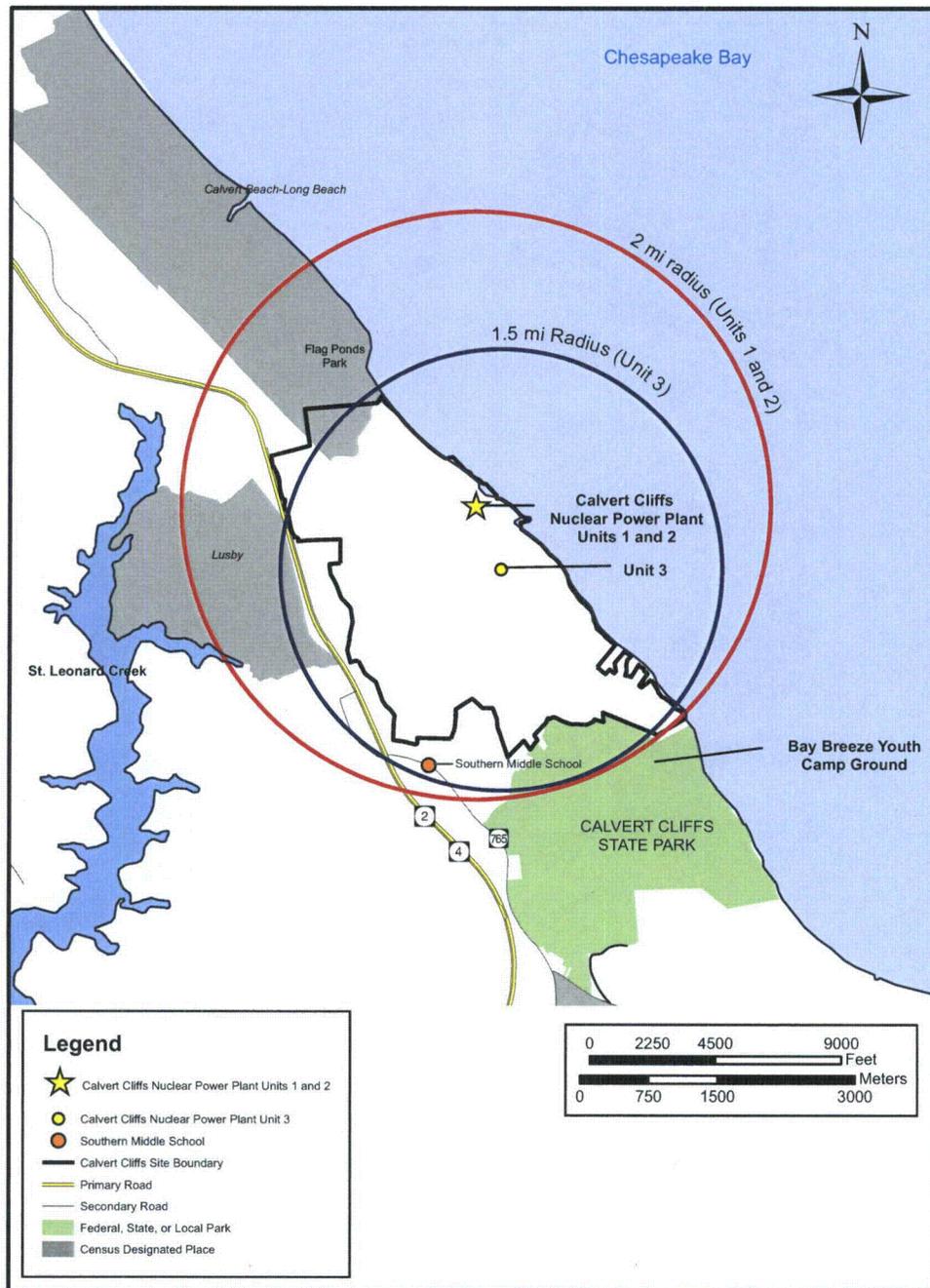


Figure 2.5-3— CCNPP Units 1, 2 and 3 Low Population Zone

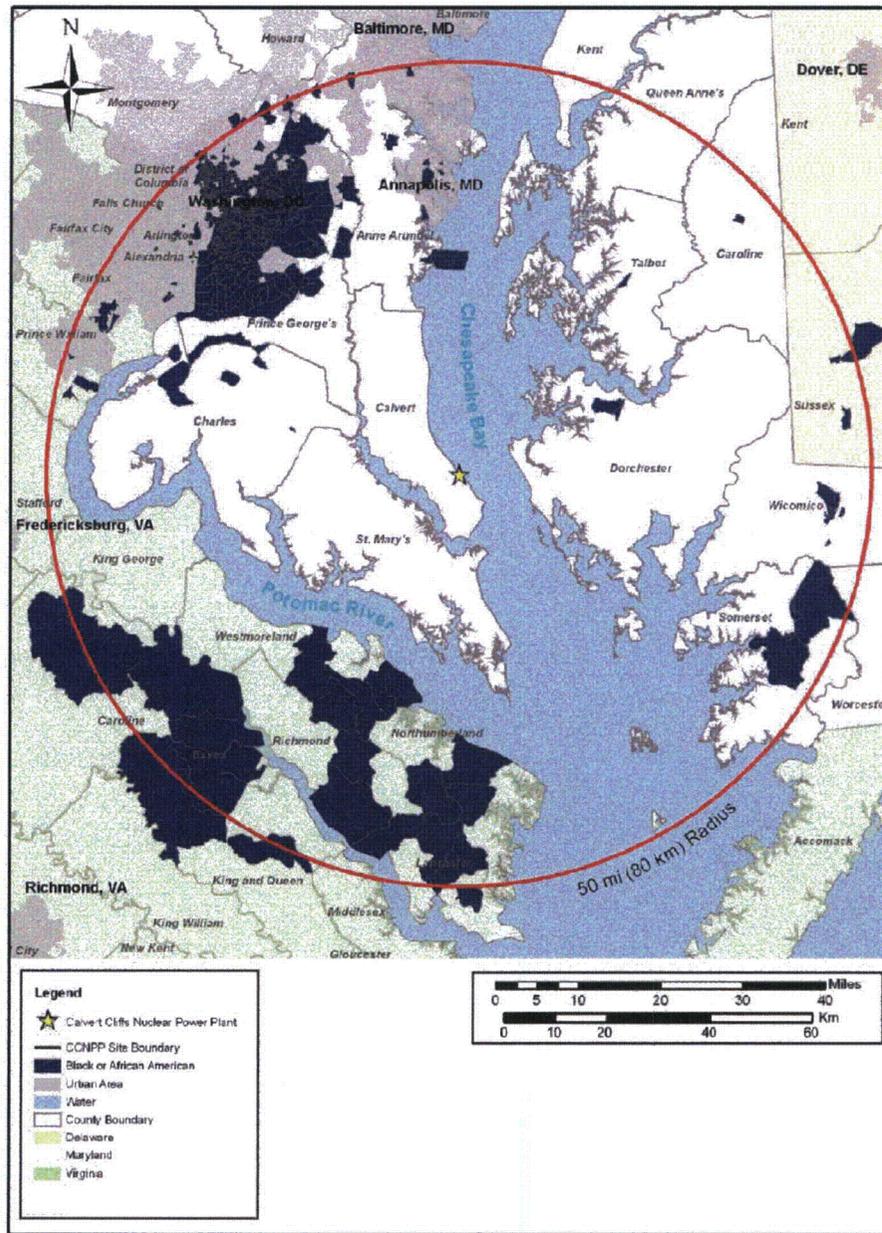


References:
CCNPP, 2002

References:

CCNPP, 2002

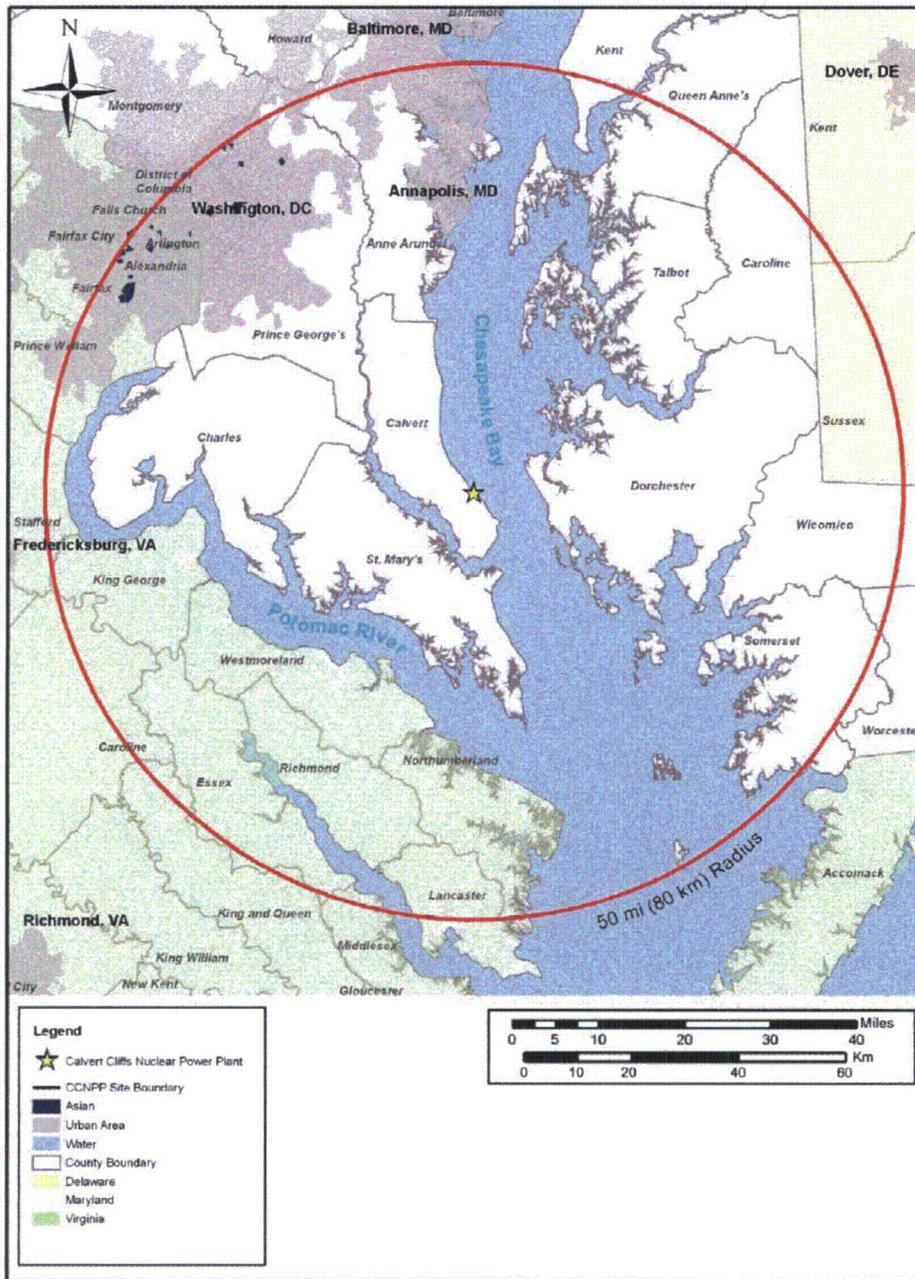
Figure 2.5-4— Black or African American Minority Population



References:

USCB, 2000a

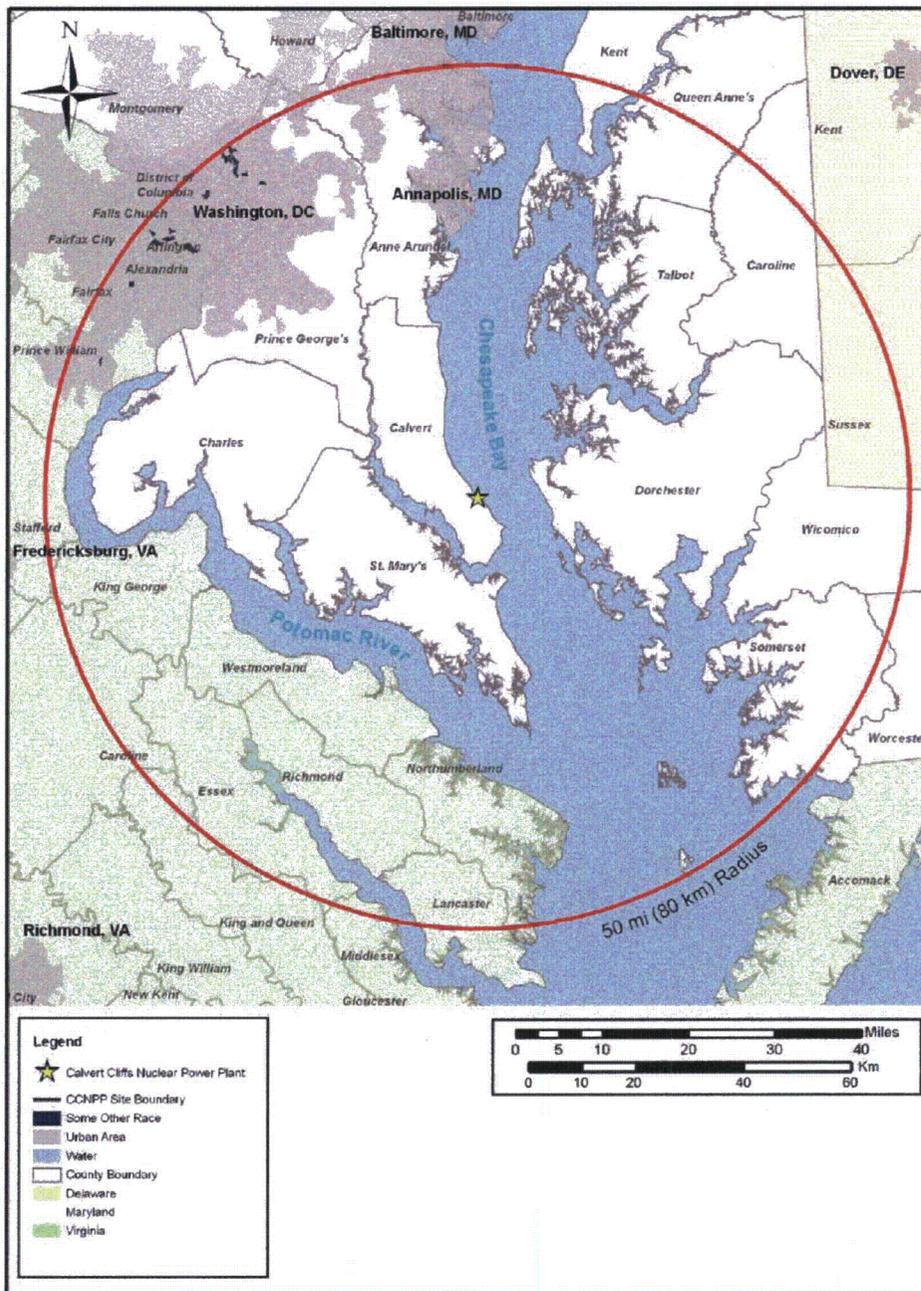
Figure 2.5-5— Asian Minority Population



References:

USCB, 2000a

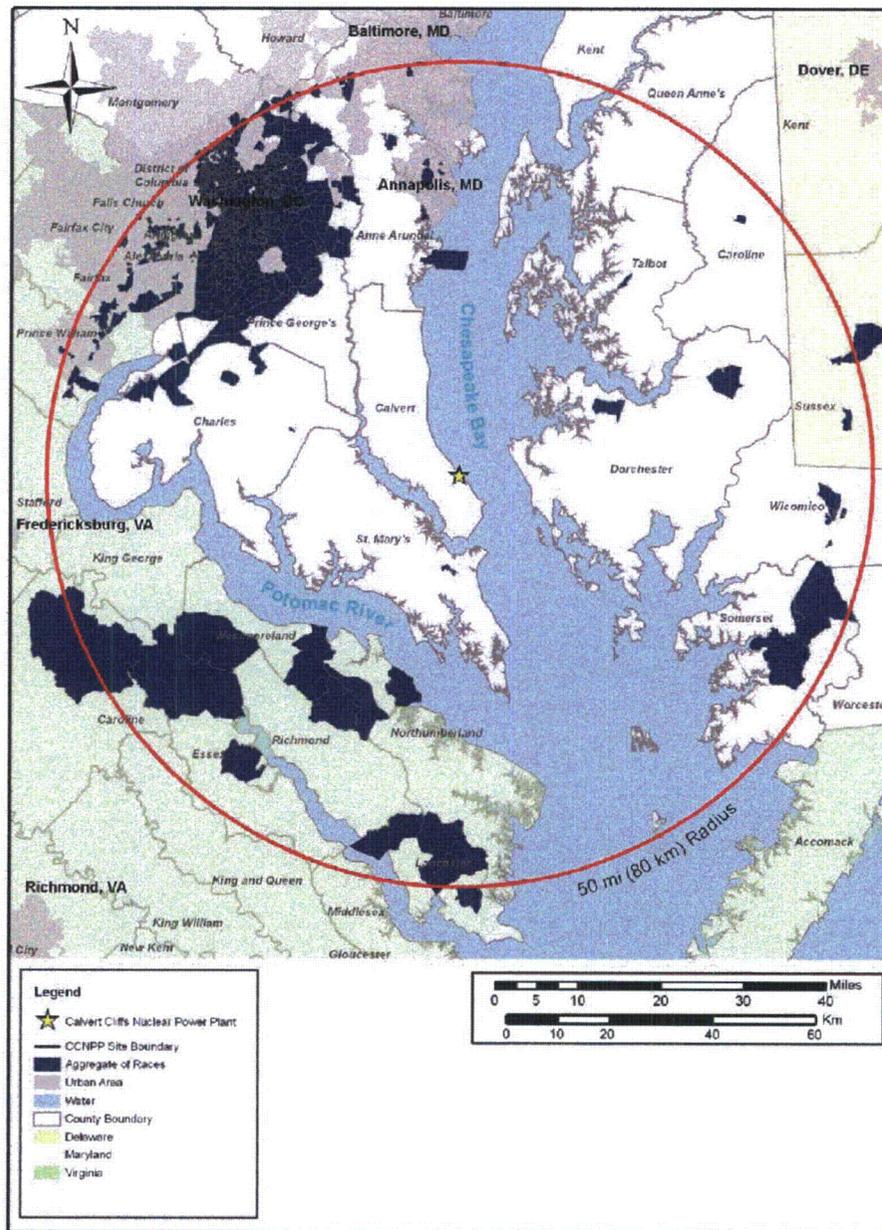
Figure 2.5-6— Some Other Minority Population



References:

USCB, 2000a

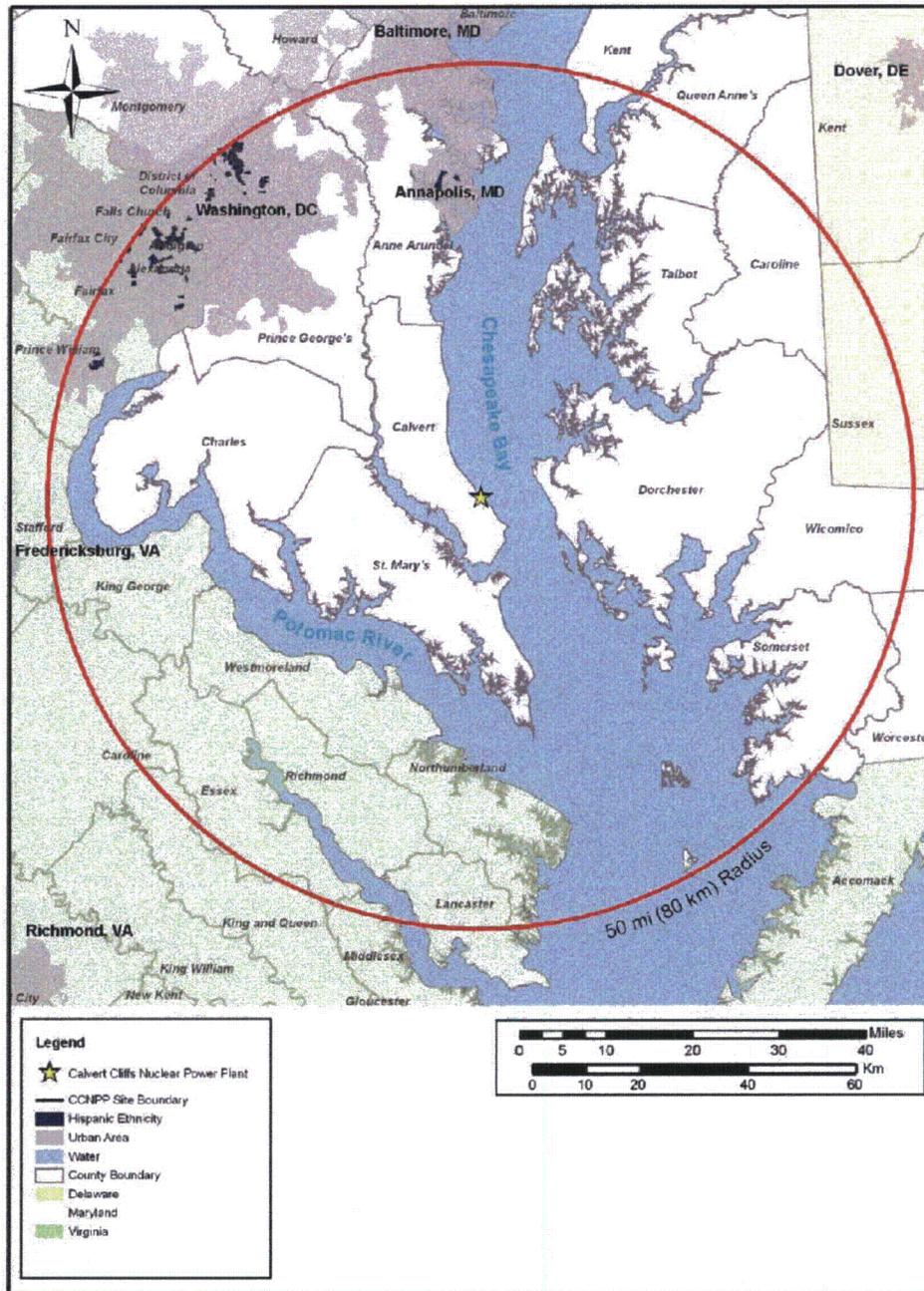
Figure 2.5-7— Aggregate Minority Population



References:

USCB, 2000a

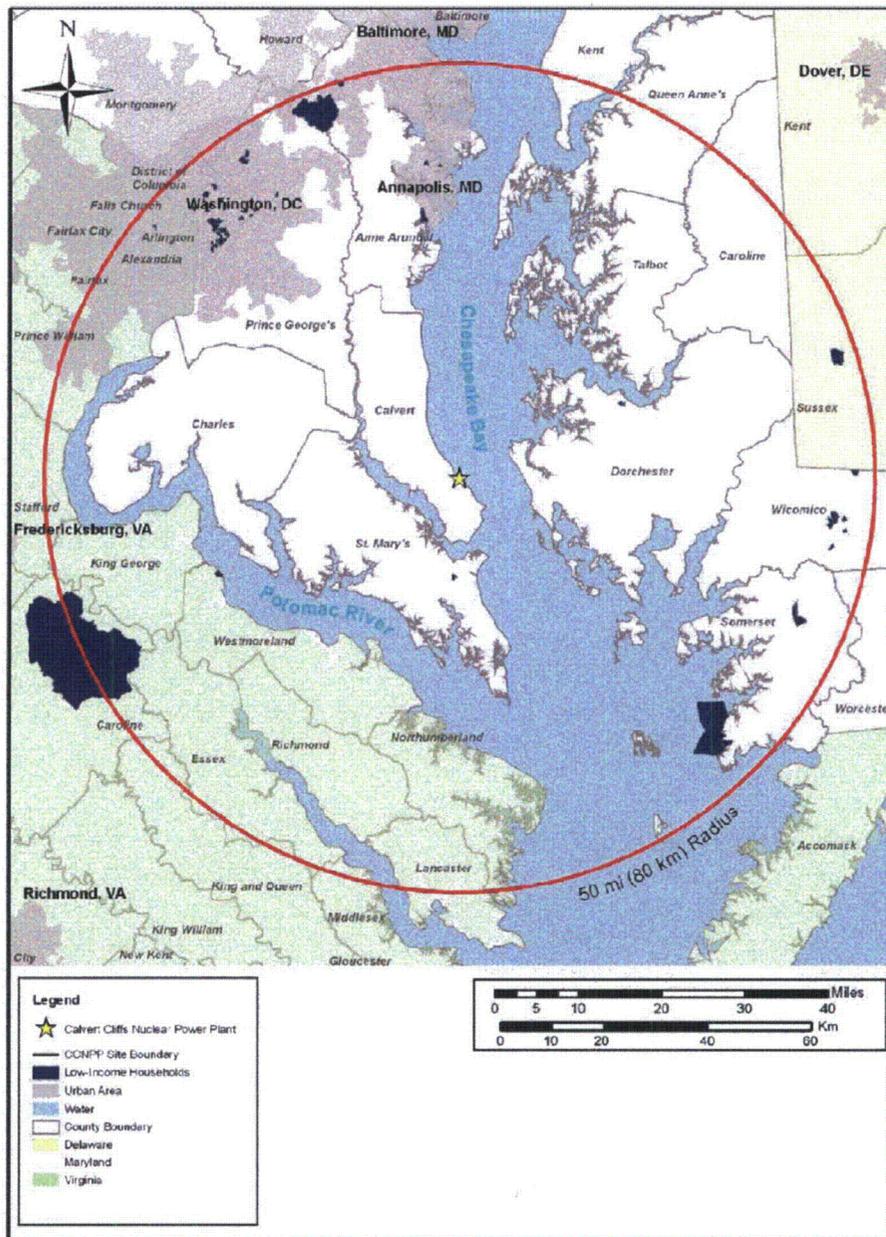
Figure 2.5-8— Hispanic Ethnicity Minority Population



References:

USCB, 2000a

Figure 2.5-9— Low Income Population



References:

USCB, 2000b

2.6 GEOLOGY

This section contains a brief description of the geologic conditions that are present at and in the vicinity of the Calvert Cliffs Nuclear Power Plant (CCNPP) site. Groundwater and surface water are discussed in Section 2.3. The CCNPP Unit 3 Final Safety Analysis Report (FSAR) presents detailed geological, seismological and geotechnical site evaluations in FSAR Section 2.5.

2.6.1 Geologic Setting

The CCNPP site is located in the Coastal Plain Physiographic Province as shown in ~~Figure 2.6-1~~ Figure 2.6-1 (USGS, 1946). The CCNPP site and vicinity topography consists of gently rolling hills with elevations ranging from about sea level to nearly 130 ft (40 m) msl. The CCNPP site is well drained by short, ephemeral streams that form a principally dendritic drainage pattern. The longest stream nearest the CCNPP site is John's Creek, which is approximately 3.5 mi (5.6 km) long and drains into St. Leonard Creek. The ephemeral streams on the CCNPP site are either tributaries to John's Creek or flow directly to Chesapeake Bay.

The Chesapeake Bay shoreline forms the eastern boundary of the CCNPP site and generally consists of steep cliffs with narrow beaches at their base. The cliffs reach an elevation of about 100 ft (30 m) msl along the eastern portion of the CCNPP site's shoreline. Observations indicate that the exposed cliff face erodes along near vertical, irregular surfaces. The erosion is primarily caused by the undercutting action of waves along the base of the cliffs. Shoreline processes and slope failure along Chesapeake Bay are discussed in FSAR Section 2.4.9. Approximately 2,500 ft (762 m) of the shoreline east of the CCNPP site, extending from the existing CCNPP Units 1 and 2 intake southward to the existing barge jetty, is stabilized against shoreline erosion.

CCNPP Unit 3 will be constructed at a grade elevation of approximately 85 ft (26 m) msl and will be set back approximately 900 ft (274 m) from the Chesapeake Bay shoreline. The bearing layer on which structural fill will be placed to form the foundation for the plant structures is in the Chesapeake Group Choptank formation. The Chesapeake Group is considered to be a confining unit with respect to groundwater conditions (MGS, 1997).

2.6.2 Stratigraphy

The CCNPP site is located on Coastal Plain sediments ranging in age from Lower Cretaceous to Recent, which, in turn, rest on a pre-Cretaceous basement. The basement rock beneath the site likely consists of rocks similar to those found west of the CCNPP site in the Piedmont Physiographic Province (MGS, 1986). The Piedmont rocks range in age from Precambrian to Paleozoic. ~~Figure 2.6-3~~ Figure 2.6-2 is a generalized stratigraphic column showing the geologic formations present beneath the CCNPP site and vicinity (Ward, 2004) (MGS, 1997).

The coastal plain sediments form a wedge which thickens from 0 ft (0 m) at its contact with the Piedmont Province southeastward to approximately 8,000 ft (2,438 m) along the Maryland coast. The surficial sediments (alluvium and beach deposits, terrace and lowland deposits, and upland deposits) at the CCNPP site consist of Quaternary alluvium in stream valleys and Tertiary Upland deposits consisting of sands and gravels above an elevation of 100 ft (30 m) msl as shown in ~~Figure 2.6-3~~ Figure 2.6-3 (MGS, 2003) (SDC, 2006). Underlying the Upland deposits is the sand-clay sequence of the Chesapeake Group, consisting of the St. Mary's, Choptank and Calvert formations in descending order. The St. Mary's and Choptank formations are exposed in the cliffs along Chesapeake Bay east of the CCNPP site. They, along

with the underlying Calvert formation, have a combined thickness of approximately 245 to 280 ft (75 to 85 m).

The base of the Chesapeake Group is marked by the top of the Piney Point Formation, which is about 20 ft (6 m) thick and is recognized by a distinctive, natural-gamma signature on borehole geophysical logs. The Piney Point together with the upper sandy section of the underlying Nanjemoy formation comprises the Piney Point-Nanjemoy aquifer. The Nanjemoy formation is approximately 180 ft (55 m) thick beneath the CCNPP site.

The Nanjemoy formation is underlain by the Marlboro clay; a thin (approximately 15 to 20 ft (4.6 to 6 m)), maroon clay overlying the Aquia formation, a major aquifer in the area. The Aquia formation is approximately 150 ft (46 m) thick beneath the CCNPP site

The lowermost Tertiary strata beneath the site is the Brightseat formation; a sandy, glauconitic clay approximately 10 to 20 ft (3 to 6 m) thick, and unconformably overlies the Cretaceous strata.

The Upper Cretaceous Magothy-Mattawan-Monmouth formations unconformably underlie the Brightseat formation. These units are very thin beneath the site (possibly 30? ft (9? m)). Geologists use a question mark (?) as a standard symbol to explicitly identify uncertainty. The usage of a question mark or query, herein (in the ER) is consistent with usage by the cited documents. This usage is common for both U.S. Geologic Survey publications and Maryland Geologic Survey publications. Further to the north in Queen Anne County, the Magothy is an aquifer. Below the Magothy are the sands and clays of the Cretaceous Potomac Group. Uppermost in this group is the Patapsco formation, a sequence of gray, brown, and red variegated silts and clays interbedded with lenticular, cross-bedded clayey sands and minor gravels. A major aquifer near the Baltimore area, the Patapsco, is largely undeveloped in the vicinity of the CCNPP site. The Patapsco formation is described as being 1,000 to 1,100 ft (305 to 335 m) thick (MGS, 1997).

Underlying the Patapsco are the Lower Cretaceous Arundel/Patuxent formations (undivided). These two units are difficult to separate in the subsurface in the CCNPP site area because of the similarity of the clays in the two formations. This was described (MGS, 1984) by the upper portion of the (undivided) Arundel/Patuxent formations as variegated, silty clay with thin, very fine sand and silt interbeds that may be as thick as 150 to 200 ft (46 to 61 m) beneath the CCNPP site. The Arundel formation is not recognized in Southern Maryland (MGS, 1984). The Patuxent formation consists of a sequence of variegated sands and clays which form a major aquifer near Baltimore, but which have not been developed in the vicinity of the CCNPP site. The thickness of the Patuxent formation beneath the CCNPP site is estimated as 600 to 700 ft (183 to 213 m).

Underlying the Arundel/Patuxent formations is the basement rock. It has been indicated (MGS, 1986) that most of the borings that penetrate coastal plain sediments and extend to the underlying basement have encountered metamorphic or igneous rocks. Sparse geophysical and borehole data indicate that the basement likely consists of exotic crystalline magmatic arc material (MGS, 1986). The thickness of this unit is not known.

2.6.3 Geologic Impact Evaluation

Based on the CCNPP site and vicinity geologic conditions described in the previous subsection, long-term adverse impacts on the geology are not anticipated as a result of construction or operation of CCNPP Unit 3. For example:

- ◆ The absence of capable faults (as discussed in FSAR Sections 2.5.1.2 and 2.5.3) at the CCNPP site eliminates the possibility for a surface fault rupture as a result of construction or operation of the proposed facility.
- ◆ Surface settlement (as a result of facility construction) could affect the drainage of surface water. However, should such settlement occur it will likely take place during construction and can be mitigated by re-grading the CCNPP Unit 3 area.
- ◆ The geologic units are not subjected to dissolution and permanent dewatering is not needed.
- ◆ There are no natural slopes in proximity to the proposed facility that could be adversely impacted by: foundation excavation, loading resulting from construction of the proposed structures, or infiltration of precipitation as a result of surface modifications.
- ◆ Any potentially negative impacts that could result from the placement of fill in the proposed plant area will be mitigated by the earthwork design.
- ◆ Some short-term geologic impacts could occur during construction. These impacts could be a result of excavation, or temporary dewatering.
- ◆ Disposal of excavated material will likely be required either onsite or offsite. Generally accepted methods will be used to mitigate the potential for erosion of this material at the disposal site. Such methods may include the use of silt fences, seeding, and drainage control. Excavated soil surfaces exposed during construction will be protected to mitigate their erosion and control surface runoff.
- ◆ Temporary dewatering of foundation excavations could result in an impact on water levels in the water table aquifer. However, these impacts are not expected to be significant.

2.6.4 References

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Ward, 2004. Tertiary Lithology and Paleontology, Chesapeake Bay Region, Geology of the National Capital Region, Field Trip Guide Book, Chapter 9, 2004.

Figure 2.6-1— Map of Regional Physiographic Provinces

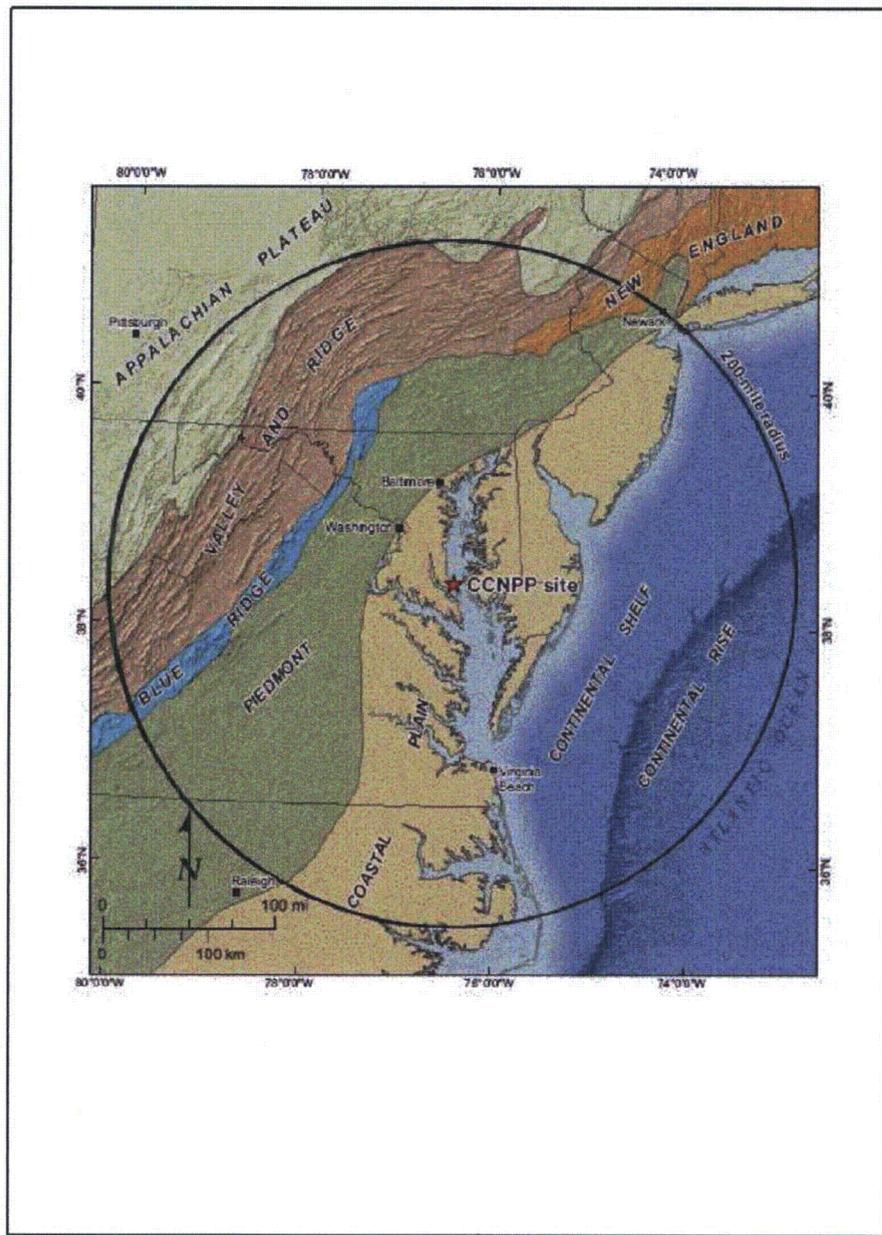


Figure 2.6-2— CCNPP Site-Specific Stratigraphic Column

ERA	PERIOD	EPOCH	AGE (Ma)	UNIT	THICKNESS (FT)	
Cenozoic	Quaternary	Holocene	0.01	Alluvium & Beach Deposits	0-50	
		Pleistocene	1.8	Terrace & Lowland Deposits		
	Tertiary	Pliocene		5.3	Upland Deposits	0-50
			Upper	11.2		
		Miocene	Middle		Chesapeake Group St. Marys Formation Choptank Formation Calvert Formation	245-280
				16.4		
		Eocene	Middle	49	Piney Point Formation	20
			Lower	54.8	Nanjemoy Formation	180
		Paleocene	Upper	61	Marlboro Clay Aquia Formation	165-170
			Lower		Brightseat Formation	10-20
					65	
		Mesozoic	Cretaceous	Upper	99	Magothy, Monmouth, Matawan Formations undifferentiated
Lower	144			Potomac Group Patuxent Formation Arunde/Patuxent Formations (undivided)	1000-1100 750-900	
Proterozoic/ Paleozoic			543+	Metamorphic/Igneous	Not Known	

Figure 2.6-3— CCNPP Site 0.6 MI (1KM) Geologic Map

