II. Ecological Setting

Response # II.1	**Document #**: 1133, 1150

Comment
EPA received two comments stating that Mount Hope Bay was historically an important breeding ground for commercially harvested fish and was one of the more productive estuaries in the Northeast.

Response
EPA agrees that Mount Hope Bay, as an estuary, serves as an important spawning and nursery area for a variety of commercial fish and shellfish. Data collected in the 1970s through the mid-1980s by a consultant for Brayton Point Station (BPS) document a dramatically greater abundance of fish than what occurs in the bay today. George Mathieson, a consultant for BPS, testified at a permit modification hearing in June 1976 "that Mount Hope Bay continues to rank among the most productive estuaries in the Northeast."

Response # II.2	**Document #**: 1133

Comment
EPA received one comment stating that Mount Hope Bay was a historically important commercial and recreational fishing location.

Response
Historically, commercial and recreational fishing for a variety of fish species did occur in Mount Hope Bay. Owing to the current status of fish populations in Mount Hope Bay, commercial fishing has been essentially eliminated and recreational fishing for many demersal species has been severely curtailed. Some recreational fishing for striped bass and bluefish, however, does continue within the bay.

Response # II.3	**Document #**: 1136, 1148

Comment
EPA received two comments stating that the CWA § 316(a) analysis did not include potential impacts on marine birds such as terns, waterfowl, and shorebirds. Many estuaries are important foraging areas for these species, so a decline in habitat quality or fish stocks might result in abundance changes to marine birds. Mount Hope Bay was formerly noted as a habitat for canvasbacks (*Aythya valisineria*), but it apparently is no longer. It would be worth investigating whether trends in bird use of Mount Hope Bay reflect wider regional trends or are specific to the bay.

Response
EPA approached both commenters to ask for data that may shed light on this question and was referred to Robert Raftovich of the U.S. Fish and Wildlife Service, who had data from the midwinter waterfowl survey. The intent of this data collection effort is to look at long-term trends in waterfowl abundance generally on a statewide scale. It is not intended to be used to look at year-to-year changes or for small spatial scales. With these limitations in mind, EPA looked at long-term trends of waterfowl abundance in the Mount Hope Bay/Taunton River area. No clear trend through time was apparent for any species, including canvasbacks (Figure 3) or even for total bird abundance. Thus, the limited data that EPA could find does not suggest a link between operations in Brayton Point Station and bird abundance in Mount Hope Bay. EPA believes that the permit limits will be protective of the aquatic community and by extension the avian community that may depend on those aquatic resources.

Response # II.4	**Document #**: 1165, 1191

Comment
EPA received two comments stating that the decline of certain species of fish in Mount Hope Bay was nearly identical to the decline of species in Narragansett Bay, in terms of both timing and degree and that any decline in fish abundance was limited to the upper third of Mount Hope Bay.

Response
EPA maintains that the decline in Mount Hope Bay is statistically greater than the changes seen in Narragansett Bay. A peer-reviewed analysis done by Mark Gibson in 1996 supports that conclusion, as does the work by Collie and Delong (2002) and the analysis by Joe DeAlteris, a consultant to PG&E-NEG. The issue of the areal extent of this decline has been the subject of some debate. PG&E-NEG has suggested that the MRI trawl data cover 5 square miles or one-third of Mount Hope Bay. EPA does not agree that the MRI trawl survey actually represents only 5 square miles. EPA discusses this in detail in responses to comments pertaining to § 316(b) elsewhere in this document. Mount Hope Bay is characterized by extensive shallow-water habitat, which is predominantly what the MRI trawl survey samples. Therefore, one could reasonably say that this survey represents at least the 9 square miles of shallow-water habitat in the bay. PG&E-NEG also represents the impacts as occurring only in Massachusetts waters. MRI has a station located in Rhode Island waters at least 1 mile south of the state line; therefore, the impacts reflected in the survey extend into Rhode Island waters.

Response # II.5	**Document #**: 1165

Comment
EPA received one comment stating that the timing of the decline of certain species of fish and the timing of the change in the cooling system do not coincide. The decline in fish precedes any changes in the cooling system.

Response
EPA disagrees with this comment. EPA believes that there is a significant association in time between the fish decline and cooling system flow. Monitoring has shown that as BPS's flow and thermal discharge increased, fish populations declined. Commenters have made the point that peak plant flow and thermal load occurred after fish populations had begun to decline; however, this does not indicate that the increase in thermal discharge was unrelated to the decline in fish. Rather, this suggests that the winter flounder population reached a threshold that triggered the collapse, and thus additional increases in flow and heat above and beyond this point would not show further harm to the already collapsed population.

Response # II.6	**Document #**: 1165

Comment
EPA received one comment stating that there is no recovery of fish stocks that have declined in either Mount Hope Bay or Narragansett Bay.

Response
EPA agrees that no recovery of fish stocks has occurred in Mount Hope Bay, but abundance of key flatfish species continues to be significantly greater in Narragansett Bay.

Response # II.7	**Document #**: 1180

Comment
EPA received one comment stating that there is no compelling evidence that overfishing is the cause of low winter flounder abundance in Mount Hope Bay.

Response
EPA has always maintained that overfishing is certainly part of the problem in Mount Hope Bay. It is one of several stressors to the fish populations in Mount Hope Bay. It is important to note that EPA's permit will address the contribution from one of these stressors, the power plant, while fishery regulators are also implementing additional restrictions on groundfishing. EPA is hopeful that this combined effort will lead to a rejuvenated Mount Hope Bay.

Response # II.8	**Document #**: 1214

Comment
EPA received one comment stating that the biological community in the Kickamuit River has changed in the recent past. Blue crabs, spider crabs, horseshoe crabs, tautog, and shellfish have declined, while lion's mane jellyfish and sea squirts have increased.

Response
EPA cannot specifically comment on these observations, except to state that the Agency is hopeful that its permit will allow for the recovery of the balanced indigenous population in Mount Hope Bay. EPA is aware that some species of sea squirts that are invasive or nonnative species have been rapidly expanding over the North Atlantic. Without knowing the specific species that the commenter was referring to, it is impossible to comment further. With respect to tautog, the fishery data discussed in this permit development are consistent with the commenter's observations.

Response # II.9	**Document #**: 1010

Comment
EPA received one comment stating that the commenter has been fishing and eating the fish in the Taunton River and Mount Hope Bay for 70 years. The commenter is in good health and does not fault the power plant for the decline of fish in Mount Hope Bay.

Response
Currently, there are no data to suggest that eating fish from Mount Hope Bay represents a human health risk. EPA's major concerns with the power plant have to do with how the operations of the facility affect habitat and impinge and entrain large numbers of eggs, larvae, juveniles, and adult organisms. See EPA's July 22, 2002, Permit Determinations Document (pp. 6-54 to 6-58) for the specific reasons for linking the decline of finfish populations to operations at BPS.

Response # II.10	**Document #**: 1022, 1035, 1038, 1053, 1056, 1086, 1096, 1099, 1204, 1209, 1220, 1222, 1225, 1227, 1211

Comment
EPA received 15 comments stating that populations of fish, including winter flounder and tautog, in Mount Hope Bay have declined or collapsed.

Response
These observations are consistent with the data generated by PG&E-NEG's monitoring program. Fish abundance as measured in the MRI trawl survey underwent a dramatic decline of over 87 percent during

1984–1985. Winter flounder, tautog, windowpane, and hogchoker experienced statistically greater declines in Mount Hope Bay than they did in neighboring Narragansett Bay. Fish abundance data through 2002 have shown no sign of recovery in Mount Hope Bay, where many species continue to exist at extremely low abundance levels.

Response # II.11	**Document #**: 1038, 1155, 1211

Comment
EPA received three comments stating that aggressive fishery management efforts have been put in place to restore winter flounder to Rhode Island bay waters. The commenters stated that BPS continues to retard the recovery of winter flounder.

Response
EPA agrees that such fishery management measures have been implemented, and that the effects of operations at BPS are a remaining source of mortality to be addressed. In its July 22, 2002, Permit Determinations Document, EPA noted the evolution of fishery restrictions in Massachusetts and Rhode Island waters for winter flounder. Mount Hope Bay has essentially become a "no-take" zone for winter flounder, and the quantity of fish taken in Narragansett Bay has also been severely restricted. Certainly, more efforts need to be made to reduce overfishing, and indeed, additional restrictions are imminent as Amendment 13 to the Northeast Multispecies Fishery Management Plan will be instituted in spring 2004. This will reduce fishing effort by 65% to winter flounder in federal waters. For Mount Hope Bay, EPA believes that the cumulative impact from BPS operations, including the entrainment of larvae and eggs, the impingement of juveniles and adults, and the direct and indirect impacts of the thermal plume, has played a significant role in preventing a recovery of winter flounder in the bay. The permit EPA issues today is designed to minimize these impacts to allow a recovery of the balanced, indigenous population of Mount Hope Bay, including the winter flounder.

Response # II.12	**Document #:** 1181

Comment
EPA received one comment stating that there has been no decline in fish in Mount Hope Bay based on the commenter's observation of recreational fishermen carrying "buckets of fish."

Response
To assess trends in populations, it is necessary to have a systematic, quantitative approach to collecting the data. PG&E-NEG's trawl survey, conducted by MRI, is the best data set for examining changes in fish abundance in Mount Hope Bay. Occasional observations of fishermen carrying fish provide no quantification of the numbers or types of fish. Furthermore, the time and effort required to catch that quantity of fish are unknown. Based on the systematic approach in PG&E-NEG's monitoring program, EPA concludes that fish populations in Mount Hope Bay have collapsed to extremely low levels compared with pre-1984 population numbers.

Response # II.13	Document #: 1205

Comment
EPA received one comment stating that overfishing has caused the decline of fish populations in Mount Hope Bay.

Response
EPA acknowledges that overfishing is an important factor in the population dynamics of a number of the commercial species in Mount Hope Bay; however, the dramatic collapse in fish populations in Mount

Hope Bay in the mid-1980s does not appear to be related to fishing pressure. In Mount Hope Bay, declines that were statistically significantly greater than those observed in Narragansett Bay occurred for both commercial and noncommercial fish species. For a full explanation of EPA's view on why the collapse of fish populations in Mount Hope Bay is not due solely to overfishing, see pp. 6-47 through 6-50 of EPA's July 22, 2002, Permit Determinations Document.

Response # II.14	**Document #**: 1209

Comment
EPA received one comment stating that bluefish no longer enter Mount Hope Bay.

Response
Trawl data from both the State of Rhode Island and PG&E-NEG show the continued presence of bluefish in Mount Hope Bay.

Response # II.15	**Document #**: 1220

Comment
EPA received one comment stating that 30,000 to 50,000 winter flounder were harvested weekly in Mount Hope Bay in the 1950s.

Response
Historical data do show that Mount Hope Bay was once a very productive area for finfish.

Response # II.16	**Document #**: 1220

Comment
EPA received one comment stating that Mount Hope Bay used to be far more productive than Narragansett Bay.

Response
The data do not exist to make this comparison; however, both waterbodies were significantly more productive in the past than they are today.

Response # II.17	**Document #**:1210

Comment
EPA received one comment stating that winter flounder populations have declined everywhere.

Response
EPA disagrees with this characterization of the status of winter flounder populations. Winter flounder populations in the Gulf of Maine and Georges Bank are doing well, with stock spawning biomass well above what the New England Fisheries Management Council considers to be the maximum sustainable level. The southern New England stock spawning biomass is currently at a level below the maximum sustainable level, but recently has experienced a small upward trend. Although there are certainly other locations where winter flounder populations have declined, the status of the regional winter flounder populations does not match the changes in abundance in Mount Hope Bay. (See Figures 4, 5, and 6.)

Response # II.18	**Document #**: 1002

Comment
One commenter indicated that "the ecological system has improved a lot," referring to the fact that he has seen more cormorants and harbor seals recently. The commenter stated that he does not believe that the station kills as many fish as are taken by fishermen and asks for more fishing restrictions.

Response
Trends in cormorant populations are discussed in the Determination Document and EPA acknowledges that their populations have increased substantially since the 1980's. However, the observation of more cormorants and harbor seals does not necessarily equate with a healthy ecosystem or with balanced, thriving fish stocks. Boston Harbor, even at its worst point, had an abundance of both cormorants and harbor seals. Severe fishing restrictions are currently in place for Mount Hope Bay and Narragansett Bay. However, additional management restrictions are needed outside these waters. Shortly, fishermen will be required to make significant additional sacrifices as Amendment 13 of the Northeast Multispecies Fishery Management Plan is enacted by next spring. Amendment 13 is intended to significantly reduce fishing mortality on a number of groundfish species, including winter flounder.

Response # II.19	**Document #**:1192

Comment
One commenter believes from personal observation that the Bay is thriving and also thinks the extent of the environmental controls in the Draft Permit is the result of the threat of a lawsuit. He also comments that there are many fish, cormorants, and fisherman in the area.

Response
EPA has designed this permit to meet the requirements of the CWA with respect to thermal discharges and intake flows. The permit was not shaped by any threat of a law suit. We discuss these legal requirements as well as the state of the biological community of Mount Bay in detail elsewhere in this document.