HUMANS AND NATURE ON GREAT BAY--
AN ENVIRONMENTAL TIME LINE

History of human activities on Great Bay:

Great Bay Resources : FISHING
Pre-settlement:
1603- first earliest recorded white visitor, although area believed used through the 16th century. Strong Native American presence. Environmental impact; fishing, beaver trade center, and beginning of a lumber trade (sawmills). Local Native American tribes traded venison, corn, furs, dried fish for iron tools, coats, guns, and bullets.
1633- white settlement begins. An epidemic of yellow fever severely impacts the Piscataqua tribe, tribes of the Pennacook confederacy in southern New Hampshire experience dramatic loss of life due to this introduced European disease (along with other introduced illnesses).
1672-Squamscott (Msquamskek) tribe leaves the Lamprey River area and moves west to the Hudson River.
1675 through 1713- struggles against settlers nearly exterminated the remaining Native American population.
17th and 18th centuries- Environmental impact: Great Bay's rich marine resources were heavily exploited. Oysters, clams, lobsters, and fin fish (i.e. alewives[salted]) were traded to Boston and the West Indies in exchange for rum, sugar, molasses, and salt. Some land around the Bay was cleared for farming but cultivation was primarily for local use.
1650- a profitable cod and mackerel fishery employed 1,500 men at Shoals.
1708- the British council of Trade and Plantations received word from the New World that the Great Bay Estuary was "...furnished with great plenty of fish; such as cod and haddock, ...bass, shad, mackerell, herring, blew-fish, alewives, pollack, frost fish, perch, flounders, sturgeons, lumbs, eels, seals, salmon and many others, and all sorts of shell-fish, such as lobsters, crabs, cockles, clams, mussels, oysters, etc."
1746, 1752- list of Portsmouth exports included cod, pickled fish, sturgeon and they were traded for West Indies goods, pork, oats, guns, wheat, nails, tar, and pitch. Fish were exported to far away ports in Canada, Spain, and Portugal.

Environmental impact: By the mid-18th century to the early 19th century fish populations started showing some decline. Weirs, nets, and drag seines were all used in the Bay, using non-selective methods that may have contributed to the overfishing of some species of fish. Striped bass populations crashed in the early 1800's. Some laws
were passed to protect fishing areas on the Bay, but not all populations affected ever fully recovered. The construction of cotton mills and dams on tributaries in the 19th century impacted salmon and shad migration routes and spawning areas. 

**18th century**-exploitation of the area’s natural resources dramatically increased as settlements expanded. Trade routes from this area increased. New Hampshire at this time was actively trading with Europe, the West Indies, and North American settlements further to the south. *Environmental impact:* fish, lumber, and furs continued to be in high demand as export commodities.

**19th and 20th centuries**- commercial fishing in the bay declines as fish populations decrease. Active fishery today not on the scale that it was in the Bay’s early settlement history.

**LUMBER TRADE:**

White pine and oak surrounding the Estuary were exploited from the earliest settlements. The first plantations set up sawmills and began ship building. Lumber and ship building activities continued as significant industries in New Hampshire for the 200 years prior to the Industrial Revolution. In 1665, 20 sawmills were established on Great Bay and its tributaries. By 1700, 90 sawmills existed in the Great Bay area. *Environmental impact:* much of the saw dust produced at these mills was dumped into the Bay and into the Bay’s tributaries, filling in significant lengths of Great Bay and river shorelines and covering saltmarshes. Lumbering operations removed significant tracts of forest around the bay, changing surface runoff patterns and in some areas allowing silt and soil to erode and fill in shallow areas of tributaries and the Bay edge.

Between 1722 and 1727, 94 vessels with an average carrying capacity of 60 tons were built in dozens of shipyards along the Piscataqua River. Beside lumber for shipbuilding, exports of lumber included 150-200 foot tall, straight white pines for masts and spars, planks, barrel staves, scaffolding, and furniture.

All trade dwindled during the years 1773-1783, due to the American Revolution, and coastal shipping and fishing waters became dangerous.

After the war, shipbuilding in and around Portsmouth continued, with a trend towards larger ships. In 1790, 20 vessels were built and launched from the Piscataqua River. Between 1800-1860, 575 sailing ships were constructed near Portsmouth, averaging over 1,000 tons each. More ship building required more labor thus more immigrants, expanding settlements, and a greater impact on Great Bay resources. Commerce also recovered and grew as well. Fish exports increased.

After the War of 1812, American shipbuilders and merchants sought to decrease reliance on foreign trade, and trade along coastal states resumed. Smaller coastal trading vessels were needed. Ship builders enjoyed a brief period of renewed industry with the sailing clipper era of 1840’s to 1860’s. However, after that period steam-powered vessels replaced sailing vessels. Portsmouth shipyards were unable to compete and became less active. Lumber continued to be exploited for both building materials and paper making.
An important vessel used during the 1800’s, unique to the Great Bay area, was the gundalow, a commercial sailing rig used to transport hay, timber, etc. as well as people. The gundalow was “heavy and broad bottomed,” a “local craft ideally suited to shoal conditions of rivers and Great Bay”. The vessels traveled among the towns along the Piscataqua River and up the reaches of the Great Bay Estuary and could sail to Boston if necessary but this would be a slow and dangerous trip, which would depend on good weather.

INDUSTRIAL REVOLUTION:

With the decline of shipbuilding the economic base of the Piscataqua region shifted to manufacture and industry. Textiles, bricks, iron, and later farm-goods produced along the Estuary and its tributaries were transported to Portsmouth for local use and export. Environmental impact: waste water from carding mills, dye houses, cotton mills, and dams for power impacted Great Bay and the rivers that feed it. Most mills relied on water for power, some mills ran on coal-powered steam engines. Flannel, linen, calico and other textiles of New Hampshire mills were produced into the 20th century. Between 1850 and 1900 Newmarket alone produced 1,500,000 yards of cotton cloth. These mills were productive until the Depression of the 1930’s.

Bricks were another important product from the shores of the Estuary. Lists of exports from 1752 to 1783 include hundreds of thousands of bricks produced in brickyards at Dover Point and Elliot, Maine. Blue marine clay was taken from the shoreline and adjacent lands with clay deposits, using horse pulled plows. Quality bricks were produced at the Piscataqua brickyards, which remained active with demands from Portsmouth and Boston. In 1888 alone, 15,000,000 bricks were exported. Environmental impact: in some parts of the Bay, large areas of clay were excavated, altering the shoreline.

Bog ore was mined, in the early 18th century, from the marshes, swamps, and ponds. The ore was dug up with an oyster rake, or with a pick and shovel if dry enough. The ore was 25% iron, only suitable for cannonballs, anchors, and iron fixtures. When the deposits were depleted the mining stopped. Environmental impact: mining operation altered natural habitats.

Tanneries were also established along the tributaries of the Bay. Environmental impact: the chemical tanning process produced chrome sludge and acid solution wastes that were discharged into the waterways. This industry was important to the area into the early 20th century.

Other industries that developed over time included; machine shops, leather manufactories, distilleries, foundries, breweries etc. Environmental impact: all of these impacted the Bay with industrial discharges.

Farming expanded to produce exportable animals and products from 1750 and thereafter. Beef cattle, sheep, and oxen were shipped to Canada. English hay was imported and established on farms around the Bay and eventually exported as well. Lard, butter, bread and flour, corn, beans, and cider were also exported. Environmental impact: organic runoff from farm feed lots and the use of saltmarsh areas as grazing land
impacted the Bay habitats with harmful bacterial pollution and saltmarsh degradation in some areas.

POLLUTION:

Pollution of the waterways by human activities impacted the Estuary all through settlement history. Human waste (sewage) from the earliest open sewers to the more recent leaking septic systems and direct dumping of untreated sewage, fish waste, slaughterhouses, laundries, industries, manufacture yards, stables, pig yards, residential privies, transportation discharges, and waste cellars all contributed to polluted run-off into the 20th century. This form of pollution has resulted in contaminating harvestable shellfish beds and introducing heavy metals, PCB's, and other toxins into the environment with the end result of limiting biological diversity in some areas and rendering toxic food fish species in some areas (among other results).

Other activities that have impacted the area include dredge and fill. Many of these activities through out the Estuary have changed the shape of the shoreline and altered natural habitat areas.

PRESENT DAY HUMAN USES OF THE BAY:

Today Great Bay is a valuable scenic and recreational resource. Boating, sailing, water skiing, fishing (both recreational and commercial), rowing, and canoeing are popular pastimes here.

Tourism has also impacted the Bay in recent years as more and more recreational boaters discover the area, regularly leaving litter and pumped-out sewage from holding tanks in their “wake.”

The Bay is still affected by disposal of diverse industrial and domestic wastes, treated sewage and effluent is discharged from all of the cities and towns surrounding the Estuary. Industrial pollutants (heavy metals and organic sludge) from Dover, Rochester, Newington, and Portsmouth and other sites continue to be discharged into the Bay and it’s tributaries. Discharge levels are monitored and regulated by state and federal agencies.