Appendix D: DEP's Suggested Work Plan for Decreasing Bacteria Concentrations at GRB

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BIDDEFORD

In Biddeford, the DEP has already surveyed most of the Little River drainage from Route 9 south to Timber Point.

1) Have GIS map/aerial photo delineating the Little River watershed
2) Have tax maps and lists of property owners
3) Conduct sanitary survey of entire watershed within Biddeford (DEP has nearly completed survey work from Route 9 south.)
    a) Identify potential surface water quality monitoring stations within the Little River watershed in Biddeford. Develop and implement ongoing monitoring program.
    b) Conduct house to house survey. Identify failing systems and other sources of domestic wastewater (e.g. straight pipes). Document and correct septic system problems.
    c) Identify all septic systems that have the potential to discharge to waters of the State (e.g. near a drainage ditch or stream). Create priority ranking for these systems. Develop and implement an inspection schedule with those of higher priority (e.g. marginal/older systems located close to water), being inspected more frequently. Update the list and priorities as new septic systems are installed.
    d) Closely review all new septic system construction in areas of marginal soils or near surface water.
4) Document and correct any livestock/manure problems (This may require bacteria monitoring of runoff during rainy periods to document that there is a problem.)
5) Remove (if practical alternatives are available) the three overboard discharge systems having the potential to impact bacteria scores at Goose Rocks Beach. (#1561-McCarthy, #1655-Clifton, #1651-Timber Point Trust/Esther Ewing Trust)
6) Due to high water table and proximity to beach and wetlands, consider sanitary sewer/POTW for Granite Point Road area.

KENNEBUNKPORT

In Kennebunkport, the DEP has already surveyed the unsewered portion of the Beaver Pond Brook watershed, the unsewered portion of the Smith Brook watershed, the Batson River watershed south of Route 9, the Tyler Brook watershed, and a small .portion of the Little River watershed south of Route 9. No sanitary survey work was done in the Batson River north of Route 9 due to the presence of the dam and headpond at Route 9 and the lack of any documented water quality problems upstream of this point.

1) Have GIS map/aerial photos delineating the Batson River, Little River, Tyler Brook, Smith Brook and Beaver Pond Brook watersheds.
2) Have tax maps and lists of property owners.
3) Identify potential surface water quality monitoring stations within the Batson River and Little River watersheds in Kennebunkport. Develop and implement an ongoing monitoring program.

4) Follow up on properties identified by DEP for further investigation.
5) Based on water quality monitoring, identify additional areas for house to house sanitary survey.
   a) Identify failing systems and other sources of domestic wastewater (e.g. straight pipes). Document and correct septic system problems.
   b) Identify all septic systems in the Batson and Little River watersheds that have the potential to discharge to waters of the State (e.g. near a drainage ditch or stream). Create priority ranking for these systems. Develop and implement an inspection schedule with those of higher priority (e.g. marginal/older systems located close to water), being inspected more frequently. Update the list and priorities as new septic systems are installed.
   c) Closely review all new septic system construction in areas of marginal soils or near surface water.
6) Field verify that sewered homes in the Batson and Little River watersheds that may impact water quality are properly connected to the sewer. (Of primary concern are those near the beach with sandy/ well drained soils.) Conduct periodic testing of sewer lines. Consider requiring all those in the Goose Rocks Beach area to connect to the sewer. Field check connections and sewer lines in the King's Lane area. Consider extending the sewer across the New Biddeford Road bridge to accommodate houses in the lower Beaver Pond Brook drainage area.
7) Require the Pendergasts and Hathaways to take appropriate measures to prevent any discharge of manure to waters of the State.

Appendix E: Glossary of Terms

Dissolved Oxygen (DO) - The concentration of oxygen that is dissolved in the water. DO is critical to the healthy metabolism of many aquatic organisms.

Ebb tide- The receding or outgoing tide; the period between high water and the succeeding low water.

Enterococci bacteria – Bacteria normally found in the feces of people and many animals. Enterococci is an indicator organism used to determine the potential for contamination from fecal matter. Although these organisms do not cause illness directly, enterococci identifies where fecal contamination may have occurred and indicates the potential presence of other harmful pathogens.

Flood tide - The incoming or rising tide; the period between low water and the succeeding high water.

Fluorometry - Involves using a beam of light that excites the electrons in molecules of certain compounds and causes them to emit light of a lower energy, typically visible light (fluorescence). This fluorescence is measured with an instrument called a "fluorometer".

Fluorometry is sometimes used to detect optical brighteners from laundry and dishwashing detergents in waters. The presence of optical brighteners may be an indicator of the presence of human wastewater. Some of the environmental factors that may interfere with fluorescence readings include temperature, salinity, and dissolved organic matter.

Geographic Information System (GIS) – A computer-based tool that stores and displays layers of information about a place to give you a better understanding of that place. The information is often represented as maps.

Geometric mean (Geomean)- The n-th root of the product of n numbers. The geometric mean of a data set is always smaller than or equal to the set's arithmetic mean (the two means are equal only if all members of the data set are equal). A geometric mean, unlike an arithmetic mean, tends to dampen the effect of very high or low values, which might bias the mean if a straight average (arithmetic mean) were calculated. This is helpful when analyzing bacteria concentrations, because levels may vary anywhere from 10 to 10,000 fold over a given period.

Glacial till – Soil material that was moved from one place to another by a glacier. Glacial till is composed of an unsorted mixture of sand, silt, clay and rocks.

Glaciomarine sediments –Soil materials deposited in or along the margins of where marine water and glacial ice were in contact. Glaciomarine sediments are sorted sands, silts and clays.

Microbial Source Tracking (MST) – Approach or approaches intended to identify the fecal sources impacting a water system. Other terms that relate to MST are bacterial source tracking (when bacteria is the target), microbial source identification, and fecal source identification.

Neap tide - A tide that occurs when the difference between high and low tide is least; the lowest level of high tide. Neap tide comes twice a month, in the first and third quarters of the moon.

Optical brighteners – Also known as fluorescent brightening agents or fluorescent whitening agents, optical brighteners are dyes that are used in most laundry and dish detergents because they reflect light and have a whitening effect. These additives are not readily biodegradable in the environment.

Pluton – Large mass of intrusive igneous (molten) rock believed to have solidified deep within the earth.

Riparian zone – The vegetated corridor along streams and rivers. It serves a number of important functions such as erosion control, flood control and wildlife habitat.

Salinity – The saltiness or dissolved salt content of a body of water.

Spring tide - The exceptionally high and low tides that occur at the time of the new moon or the full moon when the sun, moon, and earth are approximately aligned.

Watershed – A drainage area or basin in which all land and water areas drain or flow toward a central collector such as a stream, river, estuary, beach or lake at a lower elevation.