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WASTEWATER CHARACTERIZATION SURVEY, NEW BOSTON AIR FORCE STATION, NEW HAMPSHIRE

ARMSTRONG LABORATORY

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Personnel for Armstrong Laboratory Water Quality Branch conducted a wastewater characterization survey for 23 SOPS, New Boston Air Station, New Hampshire at the request of 21st AMDS, Peterson Air Force Base, Colorado from 19-26 June 1995. The scope of the survey was to sample wastewater throughout the base to determine if significant pollutant concentrations exist in the wastewater discharge, and at key source facilities. In addition, we addressed the sanitary system wholistically and determined possible sources or processes which were currently impacting the effluent and thus failing the Whole Effluent Toxicity (WET) portion of the NPDES permit. This Wastewater Treatment Facility (WWTF has a very low flow and does not discharge to a navigable waterway, and therefore does not allow for dilution for the WET portion of the biassay as of June 1995.

During the survey, we determine that there was insufficient mixing in the chlorination chamber, no dissolved oxygen in the effluent, and need for metered chemical addition for alkalinity control. A pilot continuous aeration mixer was installed during the survey and resolved the chlorine mixing and dissolved oxygen issues. This modification and the continuous vigilance of the operators of the plant to balance the alkalinity have resulted in finally passing the WET portion of the bioassay.

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During this wastewater characterization survey we received tremendous support from the Wastewater Treatment Plant operators, Bruce Larrabee and Fred Coelho, in sample collection, preparation, experiments in residual chlorine, dissolved oxygen, and injector location. Mr. Larrabee was very proactive and most anxious to support us in the completion of this survey. In addition we also received support from Ralph Johnson and his staff in the Electric Shop in accessing some tricky sampling points. Again I would like to thank the staff at the Wastewater Treatment Plant for their patience in allowing us to take over their laboratory facility for a week. I would also express gratitude for the support of Major McCoy currently at the School of Aerospace Medicine for his part in the wastewater and permit conference with the state and federal agencies and his bioassay assistance with the survey.

Additional thanks goes to TSgt Doris Hemenway for her assistance in packing the survey equipment and arranging all of the sampling bottles and associated labeling, and in acquiring all of the analytical results and compiling them into the data tables in this report.

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WASTEWATER CHARACTERIZATION SURVEY
23 SOPS, NEW BOSTON AIR STATION, NEW HAMPSHIRE
25 May 1995

INTRODUCTION

A wastewater characterization survey was conducted at New Boston Air Station (NBAS), New Hampshire from 18-29 June 95 by Capt Williston from the Armstrong Laboratory, Water Quality Branch. The main purposes of this survey were to establish baseline data concerning the wastewater influent and effluent parameters from the Wastewater Treatment Plant (WWTP) operating on base, characterize the quality of the wastewater at strategic points in the sanitary collection system, determine the impact of present wastewater disposal practices, and evaluate if the WWTP is meeting the current National Pollutant Discharge Elimination System (NPDES) permit levels. We also looked at operations whose discharges may impact the quality of the WWTP effluent and tried to determine ways to improve the effluent quality so that NBAS can pass the bioassay portion (Whole Effluent Toxicity [WET] testing) of their NPDES permit.

This wastewater characterization survey was performed at the request of Major Dan Turek (21st AMDS/SGPB). Copies of the request letter and response letters are at Appendix A. A sampling plan (See Appendix B) was created based on facility layouts provided by the base.

DISCUSSION

Background

New Boston Air Station is located between New Boston and Amherst, New Hampshire, approximately 20 miles west of Manchester, New Hampshire. It is a small installation with approximately 35 military, 75 civilian and 50 contractor personnel assigned. The main mission of this installation is to maintain and operate a set of satellite tracking and relay radar systems.

There are no aircraft operating at this facility and the only maintenance performed on site is in support of the tracking systems and maintaining a small motor vehicle fleet.

Wastewater Issues

New Boston Air Station maintains a sanitary sewer collection system that collects wastewater from a majority of the buildings and routes it to a small WWTP located on the north side of the Air Station. The Main Gate currently in use and the Fire Department located near the front gate, discharge to the septic tank and leach field located adjacent to Chestnut Hill Road. The Family Camping area has septic tanks and leach fields for three recreational trailers. Only wastewater from the base sanitary collection system and WWTP outfall were sampled and analyzed for this survey.

The WWTP has recently been constructed and was put on-line in August 1994 to replace the original WWTP. The entire sanitary collection system was overhauled at the Air Station. Little to no storm water infiltration has been noted since this collection system upgrade has been completed. Mr. Larrabee, the WWTP operator, reported that no noticeable increase in flow at the plant is observed during rain events.

The WWTP is located on the far northwest side of the NBAS cantonment area. Most of NBAS buildings' sanitary sewer lines flow to the WWTP. One lift station is required to pump the sanitary sewage from the SATCOM site, located downhill from the WWTP. Both barracks and the Vehicle Maintenance Facility, located on the north side of the NBAS, use two lift stations to convey the sewage to the WWTP.

The discharge from the WWTP flows down a hill into a wetland area, informally called the beaver pond. The water from this beaver pond flows through a few more small ponds and then finally into Joe English Pond, a prime recreational area at NBAS.

Joe English Pond had been tested for residual chlorine by personnel from the State of New Hampshire. Trace levels of residual chlorine were reported, and as a result, the WWTP was required to install a dechlorination system. Sodium bisulfite is added at the end of the chlorine contact chamber to remove any residual chlorine. Sodium bisulfite is an oxygen scavenger and therefore reduces or eliminates oxidizers, including the dissolved oxygen in the effluent. This may impact the NBAS Whole Effluent Toxicity test results.

Wastewater Sources

There are approximately 19 buildings that discharge domestic and small amounts of industrial sewage to the WWTP. Many of these facilities are operated remotely and do not have personnel occupying the building continuously. Wastewater from these locations would be comprised of cooling water and occasional domestic sewage from operations and maintenance personnel. The only housing area at this facility consist of two quadplexes serving as Enlisted Barracks (Bldgs 501 and 502).

Average wastewater flows at NBAS range from 3000 to 5000 gallons per day (0.003-0.005 MGD). The only high volume discharge that enters the WWTP is when boiler blowdown occurs or when the lift station engages. The boiler blowdown happens only a couple times a year. This increased volume due to blowdown was observed during our survey, causing the flow meter to go off scale. Otherwise, the flow from the lift station is infrequent and often the wet well becomes septic. This problem and a possible solution will be addressed later in this report.

Wastewater Permit Standards

Domestic (also called *sanitary*) *wastewater*, is defined by Metcalf & Eddy as, "Wastewater discharged from residences and from commercial, institutional, and similar facilities". *Industrial wastewater* is defined as, "Wastewater in which industrial wastes predominate". The National Pollutant Discharge Elimination System (NPDES) Permit #NH0090077 for NBAS is classified as a sanitary wastewater discharge. This permit outlines monitoring requirements and discharge limitations for the base effluent.

Sampling Strategy

A presurvey was conducted on 16 May 1995 by Capt Williston of AL/OEBW and Major Dan Turek of the 21st Space Wing, Bioenvironmental Engineering. Sampling sites were selected and inspected during this presurvey. The sample sites are dispersed throughout the base, and were selected based on potential sources of contaminants, sewage branch lines draining off key industrial areas, and flow. These sites were inspected during the presurvey to insure accessibility and sufficient flow rates. A copy of the sampling strategy is at Appendix B. A map showing the locations of the wastewater sampling sites is at Appendix C.

A description of the 11 sampling sites follows:

Site 1, WWTP Effluent: This site is located immediately west of the WWTP. Samples were collected from 20 - 23 Jun 95. Sampling the effluent over a Tuesday - Friday period was performed to represent typically low and high flow events during a weekly operation of the Air Station. Weekend operations at NBAS are minimal and would not represent the heaviest loading on the plant. Analyses at this location included EPA methods 601/602 (Purgeable Halocarbons and Aromatics), 608 (PCBs and Pesticides), 624/625 (Base Neutral Acids Extractable Total Toxic Organics), Ammonia, Total Kjeldahl Nitrogen (TKN), Nitrate and Nitrite Nitrogen as Nitrogen, Oil and Grease (O&G), Total Petroleum Hydrocarbons (TPH), Total Metals, Chemical Oxygen Demand (COD), Total Phosphorus, Phenols, Residue (Total, Volatile, Filterable, Non filterable and Settleable), Total Acidity, Total Alkalinity, Bromide, Sulfate, Dissolved Oxygen, Temperature, and pH. Samples were collected from the WWTP effluent at the back of the WWTP building. Grab samples were collected at the end of the discharge pipe, approximately 30 feet downstream from the composite sampler collection point.

Site 2, WWTP Influent: This site is located east of the WWTP. Samples from this site were also collected over the same four days as Site 1 to compare influent and effluent characteristics and evaluate the performance of the WWTP. Analyses at this location included the same parameters as the effluent at Site 1. Samples were collected from the influent composite sampler that the WWTP has operating at the plant influent located upstream from the aeration tank splitter box.

Site 3, Power Plant: This site is located in a manhole on the west side of Bldg 157. It receives wastewater from the Power Plant and the newly constructed Main Gate Entrance. Samples were collected from 19 - 21 Jun 95. Analyses at this location included EPA Methods 601/602 (Purgeable Halocarbons and Aromatics), O&G, TPH, Total Metals, COD, Phenols, Temperature, and pH. The flow at this site was very low, and required the use of a sand bag in the sewer line invert to dam the water. This was to insure that the sampler intake screen was kept submerged. This unfortunately allows solids to collect at the sampler strainer and consequently increase the solids measured in the composite samples.

Site 4, CE Maintenance Shop: This site is a manhole located east of the Bldg 117. In addition to the sewage from Bldg 117, this site also receives sewage from the Administration Building (Bldg 100), and the Consolidated Club. Samples were collected from 21 -23 Jun 95. Analyses at this location included EPA Methods 601/602 (Purgeable Halocarbons and Aromatics), O&G, TPH, Total Metals, COD, Phenols, Temperature, and pH. A sand bag was required at this location to insure adequate sample collection volume.

Site 5G, SATCOM Site Lift Station: This site is the lift station located east of the SATCOM building. One grab sample was collected from the wet well of the lift station. Though the sample was "grabbed" it actually is a composite over an unknown period of time. The lift pump may operate once or twice a day depending on the flow received at this facility. Analyses at this location included EPA Methods 601/602 (Purgeable Halocarbons and Aromatics), Total Metals, COD, Phenols, Temperature, and pH.

Site 6G, Vehicle Maintenance: This site is a small sump pump located at the effluent of the oil/water separator. The downstream side of the O/W separator was grab sampled on 21 Jun 95. Analyses at this location included EPA Methods 601/602 (Purgeable Halocarbons and Aromatics), O&G, Total Petroleum Hydrocarbons (TPH), Total Metals, COD, Phenols, Temperature, and pH. A sanitary lift station for this faciltiy is located inside of the building and does not have a readily available access for sampling. The sanitary sewer connects to a 'Y' under the road and there is no manhole above the Y from which a sample of the sewage from the Vehicle Maintenance Facilitiy can be collected.

Potable water samples were collected from the WWTP laboratory and two lead and copper samples were collected from barracks sinks.

Sampling Methods

Wastewater samples were typically collected over a 24-hour period as a time-proportional composite. Ice was added in sufficient quantity to the sampler's base insuring the wastewater being composited in the 2.5-gallon (10-liter) jar was maintained at 4°C. At the end of the compositing period, each water sample was stirred to mix the solids thoroughly and the contents poured directly from the jar into appropriate prelabeled sample containers and placed in a cooler filled with ice. The collection jar was replaced with a clean jar prior to each sampling interval. After all the samples were collected for each time period, they were transported in coolers to the temporary work center (located at the WWTP), where appropriate preservatives were placed in each bottle. The samples were then placed in a refrigerator. They were placed in insulated shipping coolers, packed with blue ice, transported to a courier at the commercial airport in Manchester and shipped overnight to Armstrong Laboratory or their contract laboratory.

Normally oils and grease, residues and volatile organics were collected as grab samples. Because we are trying to obtain a baseline characterization of the base sanitary sewage in a one week period, it is impossible to 'catch' the worst case slug with a grab sample. We have found in many previous surveys that we will detect higher levels of O&G, TPH and VOAs from composite versus grab samples. Therefore all of the O&G, TPH, Residues, VOAs, and TTOs were collected with the composite sampler unless the samples were collected at a lift station. Samples collected from lift stations were collected as grab samples. These samples were captured directly from the reservoir and then poured directly into the appropriate sample container. The samples were preserved and shipped in the same conditions as the previously mentioned samples.

Wastewater sample pH and temperature readings were taken from grab samples at each site and recorded daily along with pertinent information relevant to the weather conditions and each sample's physical qualities (rain, odor, color, sampler condition, etc.). Two of the field data sheets were lost during the survey.

All samples were collected and analyzed using EPA-approved procedures. Sample preservation was in accordance with the Armstrong Laboratory Recommended Sampling Procedures, commonly referred to as the AL Sampling Guide, dated October 1994.

Field Quality Assurance/Quality Control (QA/QC)

A field QA/QC program was used during this survey to verify the accuracy and reproducibility of laboratory results. The following types of samples were collected:

Equipment Blank Samples: Equipment blank samples were collected by pumping a liter of Laboratory Grade distilled water through the pump/purge cycle of the sampler into the appropriate sample container. Preservation and shipping was conducted in the same manner as the routine samples. These samples are used to check for cross contamination from the sampler, which may leach contaminants into the sample through residuals or desorption from the sampler tubing.

Reagent Blank Samples: Reagent blank samples are made by adding a standard aliquot of reagent preservative to a standard sample volume of Laboratory Grade distilled water. These samples are analyzed for analytical parameters that were collected in the field. These samples serve to verify that the reagent does not add quantitative value to the analyte from its own matrix.

Duplicate Samples: Duplicate samples are collected by splitting grab or composite samples with a sample splitter under identical protocol. Sample collection is accomplished by splitting the samples in the 2.5-gallon (10-liter) jar or grabbing double samples of each analyte. Each group of two samples is managed the same regarding collection, handling, preservation, storage, and shipment. This series monitors the reproducibility of sample analytical results. It should be noted that even with the use of a sample splitter, replicating duplicate sample results is difficult because changes in flow and unequal capture of solids can contribute to variability of analytes between the original and the duplicate sample.

Analytical Laboratory QA/QC

The Armstrong Laboratory Analytical Division Quality Assurance Plan establishes the guidelines and rules necessary to meet the analytical requirements of 43 states, US EPA, and private accrediting agencies (Appendix G). Specific activities include: (a) inserting a minimum of one blind sample control for each parameter analyzed on a monthly basis, (b) periodic audit of the quality assurance items from each branch, (c) daily calibration of equipment, (d) a minimum of one National Institute Standards and Technology/Standard Reference Materials (NIST/SRM) traceable standard and control sample that is included with each analytical run, (e) corrective action documented each time a quality assurance is not met, (f) established detection limits for all sample data, (g) participation by the laboratory in numerous proficiency surveys and interlaboratory quality evaluation programs, and (h) plotting and tracking all quality control samples by the appropriate analytical section.

Quality assurance, also mandatory for all contracted analytical services, is validated periodically by Armstrong Laboratory personnel.

Spike Samples: Spike samples were prepared by Armstrong Laboratory's Analytical Services Division. These samples were prepared by filling the appropriate sample container with laboratory grade distilled water, adding a known quantity of an analytical parameter, and preserving the sample as appropriate. This series monitors the sample collection, preservation, and reproducibility of analytical results. Spike samples were split at the lab, brought to NBAS and shipped to the contract lab to evaluate sample integrity and duplication.

RESULTS AND CONCLUSIONS FOR WASTEWATER CHARACTERIZATION

Contaminant concentrations and physical and chemical parameters are presented in the following section to characterize the various wastewater streams sampled during the survey. Some of the concentrations show potential problems with disposal methods. Others simply contribute to the identifying characteristics of the wastewater that reflect the types of materials being discharged into the sewers. Please note that all analytical results by site number may be found in Appendix D.

The results are segregated into tables as follows:

Table No.	Description
DA-1	Site 1, Plant Effluent
DA-2	Site 1, Plant Effluent
DB-1	Site 2, Plant Influent
DB-2	Site 2, Plant Influent
DC-1	Site 3, Power Plant
DD-1	Site 4, Civil Engineering and Building 100
DE-1	Site 5G, SATCOM Site
DF-1	Site 6, Vehicle Maintenance
DG-1	Potable Water Source and Lead and Copper for Bldg 501 and 502
DH-1	Trip Blank and Acid Reagent Blanks
DI-1	Equipment Blanks
DJ-1	Sample Spikes

Oils, Greases and Total Petroleum Hydrocarbons

Oil and Grease (O&G) is not a specific analysis because a group of substances with similar properties are measured due to their solubility in trichlorotrifluoroethane. Some of these compounds could include organic dyes, sulfur compounds, and chlorophyll. Total Petroleum Hydrocarbons (TPH) compounds are extracted and analyzed in the same manner as O&G; however, after measuring for O&G with a infrared detector, a silica gel is added to the sample to absorb the nonpetroleum compounds and remeasured (Standard Methods 18th Edition). Total Petroleum Hydrocarbons compounds detected can originate from detergents and other domestic sources, and not solely from fuels.

Tables DA-1 through DG-1 indicate low levels of O&G are present in the wastewater. Table DF-1 contains the highest O&G result found during this survey (33 mg/L). The associated TPH level, 26.4 mg/L, indicated that the origin of the O&G found was predominately petroleum. This is a rather low level of O&G considering the wastewater is from the discharge of an oil/water separator. All of the samples collected during this survey reflected typical domestic sewage concentrations of O&G and TPH. The typical concentrations of O&G in domestic wastewater are: 50 mg/L weak, 100 mg/L medium and 150 mg/L strong (Metcalf & Eddy, 1991).

Chemical Oxygen and Biochemical Oxygen Demand

Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) are two common analytical procedures performed to determine the oxygen demand of a water sample. This demand may be caused by biodegradable organics, nutrients, refractory organics, metals or dissolved inorganic solids. The BOD_5 procedure requires five days to incubate microbes which biochemically oxidize organic matter present in the wastewater. The BOD_5 results can vary depending on acclimation of the microbial colony to the organic matter and the concentration of toxic contaminants that may be present in the sample. The COD procedure utilizes a chemical oxidizer to determine the oxygen demand. This procedure gives more consistent results than the BOD procedure. BOD samples are collected routinely by WWTP personnel and analyzed at the WWTP laboratory. We collected samples for COD analyses only during this survey. The COD samples were analyzed at Armstrong Laboratory.

Tables DA-1 through DG-1 indicate most samples collected during this survey had COD levels typical of a weak wastewater. Sites 3 and 4 (Table DC-1 and DD-1) had the highest COD values found during the survey. These COD values were 360 and 343 mg/L, respectively. Typical concentrations of COD in weak domestic wastewater are 250 mg/L (Metcalf & Eddy, 1991).

Inorganic Chemical Results

Ammonia, Total Kjeldahl Nitrogen , Nitrite, Nitrate and Total Phosphorus concentrations are listed in Tables DA-1, DB-1, and DG-1. The potable water contained trace levels of Total Kjeldahl Nitrogen and Nitrite/Nitrate at 0.5 and 0.2 mg/L, respectively. The influent to the WWTP contained an average of: Ammonia at 31.6 mg/L, Total Kjeldahl Nitrogen at 36.1 mg/L, Nitrite/Nitrate (as N) at 1.7 mg/L and Total Phosphorus at 5.3 mg/L. The effluent from the WWTP contained an average of: Ammonia at <0.2 mg/L, Total Kjeldahl Nitrogen at 2.2 mg/L, Nitrite/Nitrate (as N) at 38.8 mg/L and Total Phosphorus at 4.2 mg/L. From these results it is clear that ammonia is being oxidized to nitrate in the WWTP. Total Kjeldahl Nitrogen is consumed, but phosphorus levels remains mostly unchanged. The excess nitrate- and nitrite-nitrogen is most likely the result of nitrification, the biochemical oxidation of ammonia by nitrifying bacteria.

Phenols Results

Phenolic compounds are used in many products, ranging from cough syrup to cleaning compounds. The highest level (115 ug/L) detected during this survey was at Site 1 on 21 Jun 95. This phenol level is not abnormally high especially if housekeeping operations were occurring during this time on base. Effluent from the WWTP showed less than detectable levels of phenol were being discharged on this day. The phenol concentrations found in the wastewater are within normal ranges of weak- or medium-strength domestic wastewaters. The 43 ug/L detected in the potable water sample and 159 ug/L in the sampler blank raises some concern from a quality control perspective. These results may be due to sample collection contamination, reagent contamination, sample control, or laboratory error. Conversations with personnel from the Armstrong Laboratory Analytical Division indicates that this sample had been used as a duplicate and phenol was detected at the value listed. It may be possible that soapy hands may have handled the faucet head at the laboratory and some residue washed off when the sample was collected or the reagent may be compromised. Another possible source would be the graduated marks printed on the sides of the disposable pipettes that were used to measure the aliquots of reagents during preservation. These pipettes have been discontinued for this use. This equipment sample was collected from Site 3 at Civil Engineering.

The remaining analyses from EPA Groups A, D, E, and field readings do not indicate any significant industrial discharges from these facilities.

Solids and Alkalinity Results

Total acidity, alkalinity, bicarbonate alkalinity, and solids analyses for the effluent and influent are located in Tables DA-1 and DB-2 respectively. Potable water results are compiled in Table DG-1. Total solids are listed in Tables DA-1, DB-1, DG-1, DI-1 and DJ-1.

Total Dissolved Solids (TDS) were the most elevated of the solids measured both in the influent and the effluent. The effluent was higher in TDS than the influent. This could be attributed to the sodium bicarbonate compound added to aid in alkalinity balance in the aeration basin. The NPDES permit establishes a discharge limit for Total Suspended Solids (TSS). The TSS levels found in the effluent during this survey were all below the permit limit of 25 mg/L.

Metals Results

Total metal analyses were performed on the wastewater samples by Inductively Coupled Plasma (ICP) and Graphite Furnace methods. The base effluent at Site 1 indicated no abnormally high levels of metals except for one chromium result at Site 1, (See Table DA-1). Iron, copper, molybdenum, and zinc were consistently detected in the effluent at low levels. Low levels of chromium, iron, manganese, and nickel were detected in the reagent blanks indicating that the acid used to preserve the metals samples contained low levels of these metals.

Copper, iron, lead and zinc were detected in the potable water. The base has detected lead and copper in its potable water, and this is obviously a source of lead and copper in the wastewater. The amount of copper in the raw source water (a production well on base) should be determined since igneous formations often have high levels of copper in them. The concentration of the metals in the influent to the plant were higher than the effluent indicating some metals deposit the sludge generated by the WWTP. The levels of metals detected in the effluent should not pose an environmental problem with the exception of copper. Some aquatic species are sensitive to low levels of copper.

Volatile Organic Compounds (VOCs)

Volatile Organic Compounds (VOCs) were analyzed using EPA Methods 601 (Volatile Organic Hydrocarbons) and 602 (Volatile Organic Aromatics).

VOCs are widely used in many products and are also by-products of ongoing processes throughout any USAF installation. Usually, the small amounts that enter the sanitary system are removed by a WWTP through biodegradation or volatilization. Small amounts are routinely treated with no impact to the biological treatment system. Large amounts, however, can be toxic to the microorganisms in a WWTP.

VOCs were not detected in the WWTP influent or effluent. The only two sampling sites that contained detectable levels of VOCs were the SATCOM Site (Site 5, Table DE-1), and Vehicle Maintenance (Site 6, Table DF-1). The highest methylene chloride level was 1.17 ug/L at Site 5. The highest toluene levels were detected at Site 5 (15.92 ug/L) and Site 6 (1.98 ug/L). These are very low levels and will not pose a problem to the operations of the plant, however, they should be reduced if possible. Toluene is used in: solvents for paints, lacquers, gums, and resins; as a gasoline and aviation fuel additive; inks; cements; cosmetics; spot removers; antifreezes; and fuel blending. Methylene chloride or dichloromethane is used in solvents for cellulose acetate; paint removers; vapor degreasing solvents for metal and plastics; cleaning agents; carrier solvents for insecticides and herbicides; adhesives; cleaning solvents for circuit boards; refrigerants; and components of fire extinguishing compounds.

Bromodichloromethane, bromoform, chlorodibromomethane, and chloroform are byproducts from chlorination of potable water supplies. These compounds were detected only in the potable water sample.

Total Toxic Organic Compounds

Total Toxic Organic (TTO) compounds are detected with EPA Methods 608, 624 and 625. These are purgeable, base-, neutral-, and acid-extractable organic compounds. Total Toxic Organics analyses are very expensive and were therefore only analyzed for one influent and one effluent sample from the WWTP. These samples were taken from a 24-hr composite sample for better representation of TTOs in daily flow.

Tables DA-2, and DB-2, list the Polychlorinated Biphenyls (PCBs), pesticides, volatile, base-neutral, and acid-extractable compounds for the base influent and effluent at Sites 1 and 2. No PCBs or pesticides were detected. Low levels of base-neutral compounds were detected in addition to the typical volatile compounds described in the previous section. The organic compounds found in the TTO analyses are described as follows:

Bis (2-Ethylhexl)Phthalate is used in: plasticizers for polymeric materials such as natural rubber, synthetic rubber, cellulose acetate butyrate, and polystyrene; vacuum pump oil; dielectric fluids for capacitors; inert ingredients for pesticides; insect repellent formulations; cosmetics; rubbing alcohol; and photographic film, wire and cable adhesives, and cubitainers and lab plasticware. It is also one of the most common lab contaminants and can be found in most waters that are conveyed through polyvinylchloride (PVC) plumbing.

Quality Assurance/Quality Control (QA/QC) Data

Table DG-1 lists the analytical results for the potable water from the WWTP laboratory sink. The analyses performed on the potable water reveal what chemical concentrations and impurities are found in the NBAS drinking water. It should be noted that some of the analytes detected may be due to contaminants present in the preservatives used. These levels can be subtracted from the concentrations revealed by the analyses performed on the sanitary outfalls to determine the additive effects of effluents on the system. Iron is found throughout the entire survey at approximately 0.155 to 9.08 mg/L. If a sample indicated a level of 4.0 mg/L, then the ambient or background level taken from the potable water sample of 0.201mg/L would be subtracted from the 4.0 mg/L for an reading of 3.8 mg/L. The potable water contains detectable concentrations of copper, iron, lead, zinc, oil and grease, total kjeldahl nitrogen, phenols and residues.

Table DI-1 shows the results of analyses of spike samples that were prepared at Armstrong Laboratory. These samples were preserved and shipped to AL/OEA for analyses. These results should fall within an acceptable advisory range shown in Table DI-1. Most of the results fell within this window. Some sample results fell close to this window or were not analyzed for that particular parameter. Variances can be the results of matrix interferences, poor recovery, or technician error. The laboratory re-analyzes if a sample falls outside prescribed limits. These results indicate fairly good recovery.

Reagent blanks are collected and analyzed to determine if there are contaminants in the preservatives used in sample collection. If there are detectable values reported, then that value may be subtracted from the gross levels detected in the field sample. The reagent blank results listed in Table DH-1, indicate that eight parameters were detected. The sulfuric acid used to preserve Groups A and E analytes indicated a low level of Chemical Oxygen Demand (38.0 mg/L), O&G (0.72 mg/L), Total Kjeldahl Nitrogen (0.5 mg/L), and Nitrate- and Nitrite-Nitrogen (0.16 mg/L as N). The nitric acid used in the preservation of metals indicated a detectable level of 0.248 mg/L total chromium, 1.09 mg/L of iron, 0.051 mg/L of manganese, and 0.385 mg/L of nickel. These levels are significant with respect to the levels detected in the sanitary wastewater samples collected and should be considered when evaluating sample results. We have requested the WWTP send us samples of the reagents that were supplied for this survey to evaluate the source of these metals and other constituents. The contaminant levels found in the potable water analyses should also be considered when reviewing the wastewater samples collected throughout the base.

LEAD AND COPPER

At the request of the 21st AMDS/SGPB we conducted sampling for lead and copper at the residential barracks on base. Table DG-1, lists the two drinking water samples collected from Bldgs 501 and 502. Both samples have exceeded the Safe Drinking Water Act action level of 0.015 mg/L for lead. Barracks 502 and 501 contained 0.049 mg/L and 0.022 mg/L total lead, respectively. First draw samples were collected from the basement kitchenette at 0600 on 18 Jun 95, when no human activity was going on. The potable water sample cited in this report as a background sample was collected from the WWTP laboratory after large volumes of water had been used. The lead level found in this sample was just below the action level at 0.014 mg/L. Water samples should be collected from the wellhead to determine the amount of lead that is naturally occurring. A project has recently been completed to address the lead and copper problem at NBAS. A tray aerator has been installed at the Water Treatment Building to strip CO_2 and radon from the potable water. By stripping the CO_2, the base hopes to reduce the acidity (and corrosivity) of the drinking water.

JOE ENGLISH POND

As discussed previously in this report, personnel from the State sampled Joe English Pond for residual chlorine. This sampling was performed near the natural bathing area and detectable levels of residual chlorine was reported. The type of chlorine detection equipment that was used to perform the sampling at this location is unknown. The result of this incident was that NBAS WWTP was requested to install dechlorination equipment in their new plant and to monitor for residual chlorine at the end of the discharge pipe.

Local Geography

The distance of the WWTP to Joe English Pond is more than a quarter mile. There is a rugged route from the WWTP to this pond which would consume large amounts of free available chlorine if discharged. The sampling performed by the State may have been for chlorides and not residual chlorine. EPA Region I stated to me in June that dechlorination is not necessary as long as the residual chlorine level in the WWTP discharge remains below the NPDES permit limit.

New Permit Requirements

Since the construction of the new WWTP at NBAS, a new NPDES permit has been issued. The WWTP is now required to monitor for *E.coli* instead of fecal coliforms. The *E.coli* daily limit is 406 counts/100ml with a monthly average of 126 counts/100 ml. The residual chlorine effluent levels are set at a daily maximum of 19 ug/L. There is no monthly average. A WET Test Bioassay has also been added to this permit.

The bioassay portion of the permit involves a complex series of tests where living organisms are placed into dilutions of the WWTP effluent. These organisms are exposed to various concentrations of the plant effluent and evaluated for reproducibility, survival, and growth. The aliquots of effluents must be dechlorinated if necessary, and the DO level maintained. The WWTP's contracted lab has had problems meeting some of these requirements and past test results have been suspect.

The WWTP has not been able to pass the WET Test required by the NPDES permit since the new plant has come on-line. Sodium bisulfite, the dechlorination chemical, may be the reason for this failure. Lack of dissolved oxygen (DO) in the WWTP samples may be another possibility for the WET Test failure. The ammonia and copper levels in the effluent may be also responsible for the WET test failure.

Residual chlorine, dissolved oxygen, and sodium bisulfite dechlorination were three parameters of the effluent that required process evaluation. In addition, another EPA approved laboratory will be used to evaluate the effluent to determine the toxicity of the effluent and a comparison of their results with NBAS's current bioassay laboratory will be conducted. We have not received the data from this testing.

The Sanitary Collection System and Plant Processes

The entire sanitary collection system has recently been overhauled. Infiltration and inflow problems have virtually been eliminated. NBAS is a small base consisting mostly of administrative type operations. There are a few maintenance organizations, no dining facilities, central laundry facilities or other large water consumers except for the power plant. The total wastewater flow rate for the installation is less than 35,000 gallons per day (gpd). Often it is less than 10,000 gpd.

The plant has a very low peak daily flow. A splitter box located at the headworks to the WWTP is configured to allow only half of the plant's capacity to be used. The biological cell is a continuous rolling aeration chamber. There is one small clarifier with sludge return and a chlorination contact chamber consisting of chlorine injection and baffles.

There is minimal visible turbulence in the chlorine contact chamber due to the low flow. The plant staff has collected samples from various depths within the chamber to determine if there are dead zones where the chlorine is not mixing well. They found that the most concentrated levels of free chlorine were found at the bottom of the mixing chamber and free chlorine was almost nonexistent at the surface of the chamber except at discharge weir. The chlorine is added in a liquid form and is applied proportionally based on the flow. Currently the drip rate averages one drop per 30 seconds.

The chlorine contact chamber holds approximately 435 gallons when the v-notch weir is set at 1/2-inch. With a 7 GPM flow rate, the residence time in the chamber is approximately one hour. The dechlorination addition occurs below the flow weir after the chlorination, approximately four baffle sections behind the chlorination chamber. Twenty-five feet past the contact chamber, the sanitary effluent pipe bends 90 degrees and the composite sampler screen is set at this location. Thirty-five to 40 feet of additional pipe carries the effluent to a discharge point at the top of a large hill. The wastewater flows onto rip-rap to prevent erosion, and then flows down the hill approximately 80 feet.

Chlorination, Dechlorination , and Dissolved Oxygen Assumptions

Chlorine is used as an oxidizer to disinfect the wastewater prior to discharge. The excess chlorine that is not consumed can impact aquatic life if the discharge enters a receiving water containing aquatic life. Dechlorination chemicals such as sodium bisulfite are usually used as a reducing agent to consume excess free available chlorine. If too much sodium bisulfite is applied, dissolved oxygen can be consumed. Normal effluents DO permit levels are set at 4 mg/L or higher, depending on the uses of the receiving water. The NBAS WWTP discharges into a wetland area, and the water is reaerated as it cascades down the hill from the plant. If there is no DO in the samples that are sent to the contract laboratory for bioassay testing, the samples are usually reaerated until a desired concentration is obtained.

Excess Chlorination Test

We assumed that there must have been some mistake in how the residual chlorine was reported at Joe English Pond. We suspect that total chlorides and not residual chlorine was measured. The results from the State were not available at the time of the survey.

Testing was performed at the chlorine contact chamber to determine if dechlorination was necessary. The procedure used a worst case scenario. The concentration of residual chlorine applied to the contact chamber was increased to four times the amount normally applied by the flow-proportional chlorine injector. The dechlorination injector system was disabled during this testing period. After waiting for one hour to allow for hydraulic retention time, a peristaltic pump was used to collect samples from the top and bottom of the contact chamber. Samples were taken from the center of each of the four baffle areas where possible. The chlorination injection point was also relocated to the nappe of the clarifier weir discharging into the chlorination chamber to enhance mixing. Samples were also grabbed at the end of the pipe, located approximately 60 feet downstream the dechlorination point, and 25, 50, and 100 feet downstream of this pipe in the riprap. Each sample was quickly brought to the on site laboratory and analyzed for residual chlorine using the amperometric method with a phenylarsine oxide dilution of 0.000451 ug/L. The flow rate during this time was approximately 6.6 GPM. The results are listed in the Table 1 below:

Table 1. Results of Residual Chlorine Measurements Taken at the NBAS WWTP Effluent.

COLLECTION POINTS	RESIDUAL CHLORINE IN ug/L
1st Baffle Zone Surface	10
1st Baffle Zone Bottom	10
2nd Baffle Zone Surface	15
3rd Baffle Zone Surface	5
4th baffle Zone Surface	20
4th Baffle Zone Bottom	10
Before Weir Surface	10
Before Weir Bottom	5
After Weir (Well mixed)	5
End of Pipe	5-10
25 feet Below End of Pipe	0-5
50 feet Below End of Pipe	0-3
100 feet Below End of Pipe	0

The near zero parts per billion level of residual chlorine detected the riprap, with an elevated chlorine feed rate, shows that residual chlorine is rapidly consumed when exposed to the natural organic matter growing on the riprap and is unlikely to travel through 1/4 mile of beaver and fish laden ponds and survive in measurable amounts at Joe English Pond. Therefore we recommended discontinuing the dechlorination process. This will save operational costs, reduce chemical requirements, and not adversely impact the environment.

Dissolved Oxygen and Mixing Zones Improvements

In an effort to enhance mixing in the chlorine contact chamber, reduce the amount of chlorine needed to accomplish disinfection, and elevate the DO level simultaneously, a locally purchased pore stone was positioned beside the bottom of the first baffle in the chamber. Seven 7 pounds per square inch (psi) of air pressure was applied to the stone. The resulting aeration provided a rolling aeration effect, ensuring complete mixing of the chlorine liquid. We feel the use of an aeration stone in the contact chamber will provide a much less expensive method of improving disinfection than installing a mechanical mixer.

Alternative Disinfection

Two alternative disinfection methods commonly used in WWTPs are ozonation and ultraviolet (UV) radiation. Ozone is generated by creating a corona between electrodes with electricity and passing oxygen (air) through a corrosive resistant chamber. It should be noted that any oxidizer is severely corrosive and will degrade most materials such as steel or aluminum. Concrete, stainless steel, or a polymer-lined vessel resists such corrosion. An ozone chamber could be built outside underground adjacent to the WWTP building near the manhole containing the sampling screen. This ozonation process would destroy pathogens and increase the DO level. Ultraviolet radiation is a physical disinfection, where the UV light penetrates the cell wall of the microorganism and either destroy the cells or render them sterile. Ultraviolet radiation not corrosive and does not consume as much electricity as an ozone generator. A UV system does require cleaning the bulb bank often and sometimes caustic chemicals are required to remove mineralization. A cost analyses could be conducted to determine the optimal alternate disinfection method to use if the installation should decide to switch form chlorination.

Chlorination/Dechlorination and Dissolved Oxygen Summary

Based on the trial test of quadrupling the chlorine dosage, termination of the dechlorination chemical, and zero residual chlorine results at the end of the riprap, we recommend that the installation should request dechlorination be discontinued. The chlorination injection point should be left at the nappe of the clarifier discharge into the baffle system. This will aid in the chemical mixing in the event that the pore stone is damaged (spare pore stones should be kept on hand if aeration is continued). The pore stone aeration and mixing system should be constructed for permanent usage. Air can be easily tapped from the WWTP's plumbed air supply to the aeration chamber. A stone support brace can be easily constructed from flat and angle iron and clamped to the existing staircase located over the first baffle zone. The removal of the dechlorination chemical process and increase of DO in the effluent will improve the effluent quality and may enhance the results of the WET testing.

SUMMARY AND RECOMMENDATIONS

From discussions with WWTP personnel, the effluent from the WWTP is now in compliance with the NPDES permit. This is due in part to the vigilance of the operator in the application of innovative techniques to the operation and maintenance of the treatment systems. The rolling aeration mixer in the chlorination chamber and the termination of the sodium bisulfite has improved the disinfection operation and increased the dissolved oxygen levels from nondetectable to 5-7 mg/L. The plant passed a recent WET test, and a second WET Test is scheduled in October 1995.

The lift station that collects the boiler blowdown, barracks, and Main Gate wastewaters could be improved by closing the primary pumping train valve to impede the excessive flow rate. There is a second pump and separate valve train that is used for backup in the unlikely event that the primary pump fails. This second pump can remain as is, but it would be optimum if there were an alarm at the plant to notify operators that this pump has engaged and operational actions at the WWTP could be initiated. It would also notify personnel to repair the primary pump. In addition, this lift station receives very little flow during most of the year and the wastewater turns septic in the wet well. This generates methane and can presents problems for the plant and operators. A simple air pump and pore stone could solve the septic problem. A trial setup can be installed for under $50.

The release valve used in discharging the boiler blowdown can also be controlled with a mechanical stop to slow the flow. This can be simply installed with a small bolt drill into the valve threaded stem or a mechanical collar set to keep the opening under 1-inch.

The Operation Maintenance and Training Assistance Program (OMTAP) report being prepared for NBAS should reveal areas in the WWTP that are in need of improvement and possible modifications to the plant. This report is being prepared under contract with the Air Force Civil Engineering Support Agency, Tyndall Air Force Base, Florida. From our observations during the survey, the plant operations could be improved by installing an alkalinity monitoring and dosage system. Currently the operators are applying 15 -25 pounds of sodium bicarbonate once per day. A metered system would provide more uniform chemical addition which would prevent shocks to the WWTP.

The current hydraulic residence time in the aeration chamber is longer than three days. It appears that the influent BOD_5 concentration is weak to moderate and the microbes in the aeration chamber may be starved. This can present nitrification problems. The hydraulic residence time could be decreased by reducing the size of the aeration chamber. The aeration chamber currently out of service could be installed with a baffle and a pilot test performed to evaluate this modification. If this does prove to reduce the nitrification problem, then a permanent wall can be constructed. This would also reduce operation costs for the blower system.

CONCLUSIONS

The NBAS WWTP is being well operated by two highly motivated and knowledgable operators. However, the plant is over-designed for the base's wastewater flow rate. Automated chemical addition for the alkalinity portion of the process would mitigate ammonia excursions. The aeration system installed and tested in the chlorine contact chamber improved the mixing and dissolved oxygen levels and should be made permanent. The dechlorination chemicals are not required, and their use should be discontinued. Excessive flow rates into the plant from the lift station and boiler blowdown should be controlled to mitigate surges. The potable water system should be further sampled and modified if necessary to ensure compliance with the lead and copper rule. The quality of the NBAS WWTP effluent is very good compared to most other Air Force WWTP discharges, stringent NPDES Permit limits makes maintaining compliance difficult. If the installation must continue to disinfect its wastewater discharge, alternative disinfection methods should be considered.

REFERENCES

Investigation of Inappropriate Pollutant Entries into Storm Drainage System; EPA/600/R-92/238; United States Environmental Protection Agency; Jan 1993.

Laboratory Services Guide; AL/OE-TR-1994-0136; Occupational and Environmental Health Directorate, Brooks Air Force Base, Texas; 1994.

Wastewater Engineering Treatment, Disposal, and Reuse; Metcalf & Eddy, Inc.; McGraw-Hill, Inc.; 1991.

Water Quality and Treatment: a handbook of community water supplies, American Water Works Association, 4th ed., 1990

APPENDIX - A

COORESPONDENCE REQUESTING SURVEY

UNCLASSIFIED

DR1 9 MAY 95

01 04 081902Z MAY 95 RR UUUU SGPB

NO

21 AMDS PETERSON AFB CO//SGPB//

X 6 SWS/CAPE COD AS MA//CC/CE//

8 SWS/ELDORADO AS TX//CC/CE//

X 23 SOPS/NEW BOSTON AS NH//CC/CE//

X INFO 21 CES/PETERSON AFB CO//CEV//

X 21 MDG/PETERSON AFB CO//SG/SGPSR// SGPB

X 50 SW/FALCON AFB CO//CEV//

~~ARMSTRONG LAB/BROOKS AFB TX//OEB//OEBW//~~

HQ AFSPC/PETERSON AFB CO//SGPB//

UNCLAS

SUBJ: SITE CLEARANCE VISITS, CAPE COD, NEW BOSTON AND ELDORADO AIR STATIONS

1. THE FOLLOWING SCHEDULE IS SET FOR THE WEEK OF 15-19 MAY 95 TO CONDUCT KICK-OFF MEETINGS FOR SITE WASTEWATER CHARACTERIZATION STUDIES TO BE CONDUCTED BY PERSONNEL FROM THE WATER QUALITY BRANCH OF ARMSTRONG LABORATORY, BROOKS AFB TX. THIS IS A 21ST AND 50SW BIOENVIRONMENTAL ENGINEERING FUNDED STUDY TO FULLY CHARACTERIZE THE SITE SANITARY SEWAGE INFLUENT AND EFFLUENT, DETERMINE IF ANY CROSS CONNECTIONS EXIST IN THE SANITARY/STORM DISTRIBUTION SYSTEMS, AND TO DETERMINE THE EFFICIENCY/EFFECTIVENESS OF ANY OIL/WATER SEPARATOR

MAJ DANIEL R. TUREK, DIRECTOR, BES
SGPB 556-7721

MAJ TUREK, DIR, BES/SGPB/6-7721
CRC:

UNCLASSIFIED 081902ZMAY95

APPENDIX - B

SAMPLING STRATEGY

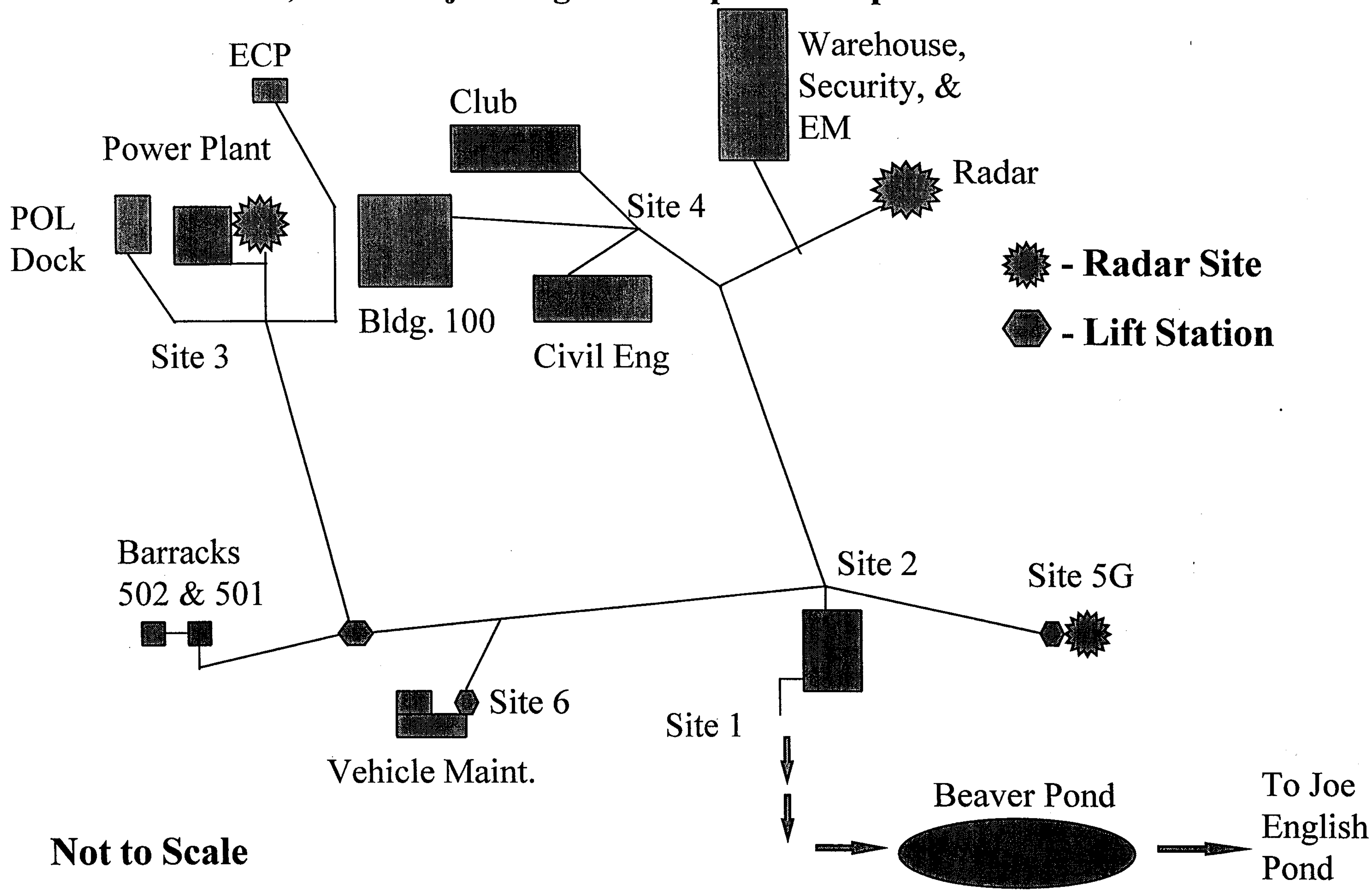
ANALYTES	Site-1	Site-2	Site-3	Site-4	Site-5G	Site-6	Site-7	QC/QA	QC/QA	Total
NEW BOSTON 19-24 JUNE	PLANT EFF	PLANT INF	POWER PLANT	CE MAINT	RADAR SITE	VEHICLE MAINT	RADAR SITE 109	POTABLE	SPIKES, BLKS,	Samples
GROUP A	7 Day	4 Day	4 Day	3 Day	1 Day	1 Day	2 Day	1 Day	1 Day	
Ammonia	4	4								8
Chemical Oxygen Demand	4	4	3	3	1	1	2	1	3	22
Kjeldahl Nitrogen	4	4						1		9
Nitrate	4	4						1		9
Nitrite	4	4						1		9
Oil & Grease	4	4	3	3	1	1	2	1	3	22
Total Petroleum Hydrocarbon	4	4	3	3	1	1	2	1	3	22
Total Phosphorus	4	4						1		9
										0
GROUP E										
Phenols	4	4	3	3	1	1	2	1	3	22
										0
GROUP F, METALS										0
Aluminum	4	4						1	3	12
Arsenic	4	4	3	3	1	1	2	1	3	22
Barium	4	4						1	3	12
Beryllium	4	4						1	3	12
Boron	4	4						1	3	12
Cadmium	4	4	3	3	1	1	2	1	3	22
Calcium	4	4						1	3	12
Chromium (Total)	4	4	3	3	1	1	2	1	3	22
Copper	4	4	3	3	1	1	2	1	3	22
Iron	4	4	3	3	1	1	2	1	3	22
Lead	4	4	3	3	1	1	2	1	3	22
Magnesium	4	4						1	3	12
Manganese	4	4						1	3	12
Mercury	4	4	3	3	1	1	2	1	3	22
Nickel	4	4	3	3	1	1	2	1	3	22
Selenium	4	4						1	3	12
Silver	4	4	3	3	1	1	2	1	3	22
Vanadium	4	4						1	3	12
Thallium	4	4						1	3	12
Zinc	4	4	3	3	1	1	2	1	3	22
										0
GROUP G										0
Acidity								1		1
Alkalinity								1		1
Bromide								1		1
Residue, total	4	4						1		9
Residue, Filterable	4	4					2	1	3	14
Residue, Nonfilterable	4	4						1	3	12
Residue, Settleable	4	4						1	3	12
Residue, Volatile	4	4						1	3	12
Sulfate								1		1
										0
EPA METHODS										0
601 Purgeable Halocarbon										0
602 Purgeable Aromatics										0
601/602	4	4	3	3	1	1	2	1	3	22
608	2	2								4
624/625	2	2								4
Total Site Analytes	144	144	45	45	15	15	32	38	87	565

POC Desiree Moyee DSN- 489-2425, Fax 489-2324: Project Leader Capt Williston @ AL/OEBW DSN 240-3305

APPENDIX - C

SAMPLING LOCATION MAP

New Boston Air Station Wastewater Survey Site Map
Conducted By: Armstrong Laboratory, Water Quality Branch
June 19-23, 1995 Project Engineer: Capt. Christopher Williston



APPENDIX - D

ANALYTICAL RESULTS

NEW BOSTON AS, NH

WASTEWATER CHARACTERIZATION SURVEY: 19 JUN - 24 JUNE 1995

TABLE DA - 1 SITE 1: PLANT EFFLUENT

GROUP A & B ANALYTES (mg/L)	COLLECTION DATE TUES, 20 JUN 1995	COLLECTION DATE WED, 21 JUN 95	COLLECTION DATE THUR, 22 JUN 95	COLLECTION DATE FRI, 23 JUN 95
Chemical Oxygen Demand	98	69	52	74
Oil and Grease	0.7	1	0.8	7.12
Total Petroleum Hydrocarbon	<1	<1	<1	<1
GROUP C ANALYTES (mg/L)				
Ammonia	<0.2	<0.2	<0.2	<0.2
Kjeddahl Nitrogen	1.8	3.6	1.5 -1.9	1.6
Nitrate/Nitrite	34	31	35 - 48	48.6
Total Phosphorus	4	4.4	3.6 -4	4.6
GROUP E ANALYTES (ug/L)				
Phenols	21	<10	21	<10
GROUP F ANALYTES (mg/L)				
Aluminum	0.142	0.174	0.069	0.077
Antimony	<0.006	<0.006	<0.006	<0.006
Arsenic	<0.010	<0.010	<0.010	<0.010
Barium	<0.050	<0.050	<0.050	<0.050
Beryllium	<0.004	<0.004	<0.004	<0.004
Cadmium	<0.005	<0.005	<0.005	<0.005
Total Chromium	<0.010	<0.010	0.017	<0.010
Cobalt	<0.050	<0.050	<0.050	<0.050
Copper	0.03	0.038	0.03	0.029
Iron	0.155	0.337	0.176	0.335
Lead	<0.020	<0.020	<0.020	<0.020
Manganese	<0.030	<0.030	0.007	<0.030
Mercury	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.661	0.649	0.657	0.637
Nickel	<0.030	<0.030	<0.030	<0.030
Selenium	<0.010	<0.010	<0.010	<0.010
Silver	<0.010	<0.010	<0.010	<0.010
Thallium	<0.002	<0.002	<0.002	<0.002
Titanium	<0.050	<0.050	<0.050	<0.050
Vanadium	<0.050	<0.050	<0.050	<0.050
Zinc	0.118	0.128	0.118	0.111
Group G (mg/L)				
Acidity Total	13	11	15	9
Alkalinity Total	218	256	286	379
Bromide	<0.5	<0.5	<0.5	<0.5
Residue Total	1624	1709	1736	1808
Residue, Filterable (TDS)	1557	1510	1648	1736
Residue, Nonfilterable (TSS)	17	18	15	9
Residue, Settleable	0.5	0.4	<0.2	<0.2
Residue, Total Volatile	71	73	95	170
Sulfate	261	266	271	311
ON SITE ANALYSES				
pH (units)	7			6.5
Temperature (°C)	18	18	17	62.4°F
SAMPLE NUMBERS	CN950754,CN950755 GN950756,	CN950790,CN950791 GN950792	CN950810,CN950811 GN950812	CN950830, CN950831 GN950832
EPA METHOD 601/602/624 VOLATILE COMPOUNDS (ug/L)	COLLECTION DATE TUES, 20 JUN 1995	COLLECTION DATE WED, 21 JUN 95	COLLECTION DATE THUR, 22 JUN 95	COLLECTION DATE FRI, 23 JUN 95
Benzene	<1	<5	<5	<1
Benzyl Chloride	<1	<5	<5	<1
Bromobenzene	<1	<5	<5	<1
Bromodichloromethane	<1	<5	<5	<1
Bromoform	<1	<5	<5	<1
Bromomethane	<1	<5	<5	<1
Carbon tetrachloride	<1	<5	<5	<1
Chlorobenzene	<1	<5	<5	<1
Chlorodibromomethane	<1	<5	<5	<1
Chloroethane	<1	<5	<5	<1
Chloroform	<1	<5	<5	<1
2-Chlorethylvinyl Ether	<1	<5	<5	<1
Chloromethane	<1	<5	<5	<1
Chlorodibromomethane	<1	<5	<5	<1
Dibromomethane	<1	<5	<5	<1
1,2-Dichlorobenzene	<1	<5	<5	<1
1,3-Dichlorobenzene	<1	<5	<5	<1
1,4-Dichlorobenzene	<1	<5	<5	<1
Dichlorodifluoromethane	<1	<5	<5	<1
1,1-Dichloroethane	<1	<5	<5	<1
1,2-Dichloroethane	<1	<5	<5	<1
1,1-Dichloroethene	<1	<5	<5	<1
Trans-1,2-Dichloroethene	<1	<5	<5	<1
1,2-Dichloroethene	<1	<10	<10	<1
1,2-Dichloropropane	<1	<5	<5	<1
Cis-1,3-Dichloropropene	<1	<5	<5	<1
Trans-1,3-Dichloropropene	<1	<5	<5	<1
Ethyl Benzene	<1	<5	<5	<1
Methylene Chloride	<1	<5	<5	<1
1,1,1,2-Tetrachloroethane	<1	<5	<5	<1
1,1,2,2-Tetrachloroethane	<1	<5	<5	<1
Tetrachloroethylene	<1	<5	<5	<1
Toluene	<1	<5	<5	<1
1,1,1-Trichloroethane	<1	<5	<5	<1
1,1,2-Trichloroethane	<1	<5	<5	<1
Trichloroethylene	<1	<5	<5	<1
Trichlorofluoromethane	<1	<5	<5	<1
1,2,3-Trichloropropane	<1	<5	<5	<1
Vinyl Chloride	<1	<5	<5	<1
o-Xylene	<1	<5	<5	<1
p,m-Xylene	<1	<5	<5	<1
SAMPLE NUMBER	GN950758	GN950793	GN940814	GN950833

NEW BOSTON AS, NH

WASTEWATER CHARACTERIZATION SURVEY: 19 JUN - 24 JUNE 1995

TABLE DA - 2 SITE 1: PLANT EFFLUENT

EPA METHOD 625 (ug/L)	COLLECTION DATE TUES, 20 JUN 1995	COLLECTION DATE THUR, 22 JUN 95
Acenaphthene	<5	<6
Acenaphthylene	<5	<6
Anthracene	<5	<6
Aroclor 1260	<50	<60
Benzidine	<30	<30
Benzo(a)anthracene	<5	<6
Benzo(b)fluoranthene	<5	<6
Benzo(k)fluoranthene	<5	<6
Benzo(a)pyrene	<5	<6
Benzo(ghi)perylene	<5	<6
Benzyl butyl phthalate	<5	<6
Bis(2-chloroethyl)ether	<5	<6
Bis(2-chloroethoxy)methane	<5	<6
Bis(2-ethylhexyl)phthalate	<10	20
Bis(2-chloroisopropyl)ether	<5	<6
4-Bromophenyl phenyl ether	<5	<6
2-Chloronaphthalene	<5	<6
4-Chlorophenyl phenyl ether	<5	<6
Chrysene	<5	<6
Dibenzo(a,h)anthracene	<5	<6
Di-n-butylphthalate	<5	<6
1,2-Dichlorobenzene	<5	<6
1,3-Dichlorobenzene	<5	<6
1,4-Dichlorobenzene	<5	<6
3,3-Dichlorobenzidine	<40	<50
Diethyl phthalate	<5	<6
Dimethyl phthalate	<10	<10
2,4-Dinitrotoluene	<5	<6
2,6-Dinitrotoluene	<5	<6
Di-n--octyl phthalate	<5	<6
Fluoranthene	<5	<6
Fluorene	<5	<6
Hexachlorobenzene	<5	<6
Hexachlorobutadiene	<5	<6
Hexachlorocyclopentadiene	<5	<6
Hexachloroethane	<5	<6
Indeno(1,2,3-cd)pyrene	<5	<6
Isophorone	<5	<6
Naphthalene	<5	<6
Nitrobenzene	<5	<6
N-Nitrosodimethylamine	<5	<6
N-Nitrosodi-n-propylamine	<5	<6
N-Nitrosodiphenylamine	<5	<6
Phenanthrene	<5	<6
Pyrene	<5	<6
1,2,4-Trichlorobenzene	<5	<6
4-Chloro-3-methylphenol	<5	<6
2-Chlorophenol	<5	<6
2,4-Dichlorophenol	<5	<6
2,4-Dimethylphenol	<5	<6
2,4-Dinitrophenol	<20	<20
2-Methyl-4,6-dinitrophenol	<20	<20
2-Nitrophenol	<5	<6
4-Nitrophenol	<20	<20
Pentachlorophenol	<20	<20
Phenol	<5	<6
2,4,6-Trichlorophenol	<5	<6
SAMPLE NUMBER	GN950759	GN950815

COLLECTION DATE EPA METHOD 608 (ug/L)	COLLECTION DATE TUES, 20 JUN 1995	COLLECTION DATE THUR, 22 JUN 95
Aldrin	<0.01	<0.01
alpha-BHC	<0.01	<0.01
beta-BHC	<0.01	<0.01
delta-BHC	<0.01	<0.01
Lindane (gamma-BHC)	<0.01	<0.01
Chlordane	<0.01	<0.01
4,4' DDD	<0.05	<0.05
4,4' DDE	<0.01	<0.01
4,4'-DDT	<0.01	<0.01
Dieldrin	<0.01	<0.01
Endosulfan I	<0.01	<0.01
Endosulfan II	<0.01	<0.01
Endosulfan Sulfate	<0.01	<0.01
Endrin	<0.01	<0.01
Endrin Aldehyde	<0.01	<0.01
Heptachlor	<0.01	<0.01
Heptachlor Epoxide	<0.01	<0.01
Methyoxychlor	<0.05	<0.05
Texaphene	<1	<1
Aroclor 1016	<0.5	<0.5
Aroclor 1221	<0.5	<0.5
Aroclor 1232	<0.5	<0.5
Aroclor 1242	<0.5	<0.5
Aroclor 1248	<0.5	<0.5
Aroclor 1254	<0.5	<0.5
Aroclor 1260	<0.5	<0.5
SAMPLE NUMBER	GN950757	GN950813

NEW BOSTON AS, NH

WASTEWATER CHARACTERIZATION SURVEY: 19 JUN - 24 JUNE 1995

TABLE DB - 1 SITE 2: PLANT INFLUENT

			DUPLICATE		
	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
GROUP A & B ANALYTES (mg/L)	TUES, 20 JUN 1995	WED, 21 JUN 95	WED, 21 JUN 95	THUR, 22 JUN 95	FRI, 23 JUN 95
Chemical Oxygen Demand	64	149	149	87	160
Oil and Grease	<1	21.2	11	14.2	1.36
Total Petroleum Hydrocarbon	5.4	20.8	2.2	2.1	<1
GROUP C ANALYTES (mg/L)					
Ammonia	27.2	40.4	44	33.6	23.6
Kjeddahl Nitrogen	28.5	48	48.5	40.5	27.5
Nitrate/Nitrite	1.4	1.4	1.3	2.5	1.64
Total Phosphorus	4.8	8.2	9	4.6	3.2
GROUP E ANALYTES (ug/L)					
Phenols	35	115	43	46	37
GROUP F ANALYTES (mg/L)					
Aluminum	0.327	0.768	0.745	0.147	0.182
Antimony	<0.006	<0.006	<0.006	<0.006	<0.006
Arsenic	<0.010	<0.010	<0.010	<0.010	<0.010
Barium	0.14	0.118	0.119	0.091	0.095
Beryllium	<0.004	<0.004	<0.004	<0.004	<0.004
Cadmium	<0.005	<0.005	<0.005	<0.005	<0.005
Total Chromium	<0.010	<0.010	<0.010	<0.010	<0.010
Cobalt	<0.050	<0.050	<0.050	<0.050	<0.050
Copper	0.125	0.437	0.439	0.134	0.191
Iron	1.12	3.47	3.21	0.702	1.55
Lead	<0.020	<0.020	<0.020	<0.020	0.071
Manganese	0.045	0.079	0.079	0.039	0.077
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	1.18	1.51	1.34	1.67	1.02
Nickel	<0.030	0.045	0.042	<0.030	0.05
Selenium	<0.010	<0.010	<0.010	<0.010	<0.010
Silver	<0.010	<0.010	<0.010	<0.010	<0.010
Thallium	<0.002	<0.002	<0.002	<0.002	<0.002
Titanium	<0.050	<0.050	<0.050	<0.050	<0.050
Vanadium	<0.050	<0.050	<0.050	<0.050	<0.050
Zinc	0.324	0.384	0.39	0.245	0.725
Group G (mg/L)					
Acidity Total	42	45	53	39	33
Alkalinity Total	152	213	196	200	143
Bromide	<0.5	0.5	<0.5	0.5	0.5
Residue Total	1212	1580	1573	1719	1376
Residue, Filterable (TDS)	1060	820	208	1500	1364
Residue, Nonfilterable (TSS)	114	128	165	104	92
Residue, Settleable	6	8.6	4.2	1.7	1.8
Residue, Total Volatile	71	305	249	160	343
Sulfate	31	40	40	51	44
ON SITE ANALYSES					
pH (units)	7	7.2	7.2		7
Temperature (°C)	18	18	18	18	67.1°F
SAMPLE NUMBERS	CN950760,CN950761 GN950762	CN950766,CN950767 GN950768	CN950794,CN950795 GN950796	CN950816,CN950817 GN950818	CN950834, CN950835 GN950836
EPA METHOD 601/602/624	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)	TUES, 20 JUN 1995	WED, 21 JUN 95	WED, 21 JUN 95	THUR, 22 JUN 95	FRI, 23 JUN 95
Benzene	<1	<1	<5	<5	<1
Benzyl Chloride	<1	<1	<5	<5	<1
Bromobenzene	<1	<1	<5	<5	<1
Bromodichloromethane	<1	<1	<5	<5	<1
Bromoform	<1	<1	<5	<5	<1
Bromomethane	<1	<1	<5	<5	<1
Carbon tetrachloride	<1	<1	<5	<5	<1
Chlorobenzene	<1	<1	<5	<5	<1
Chlorodibromomethane	<1	<1	<5	<5	<1
Chloroethane	<1	<1	<5	<5	<1
Chloroform	<1	<1	<5	<5	<1
2-Chlorethylvinyl Ether	<1	<1	<5	<5	<1
Chloromethane	<1	<1	<5	<5	<1
Chlorodibromomethane	<1	<1	<5	<5	<1
Dibromomethane	<1	<1	<5	<5	<1
1,2-Dichlorobenzene	<1	<1	<5	<5	<1
1,3-Dichlorobenzene	<1	<1	<5	<5	<1
1,4-Dichlorobenzene	<1	<1	<5	<5	<1
Dichlorodifluoromethane	<1	<1	<5	<5	<1
1,1-Dichloroethane	<1	<1	<5	<5	<1
1,2-Dichloroethane	<1	<1	<5	<5	<1
1,1-Dichloroethene	<1	<1	<5	<5	<1
Trans-1,2-Dichloroethene	<1	<1	<5	<5	<1
1,2-Dichloroethene	<1	<1	<10	<10	<1
1,2-Dichloropropane	<1	<1	<5	<5	<1
Cis-1,3-Dichloropropene	<1	<1	<5	<5	<1
Trans-1,3-Dichloropropene	<1	<1	<5	<5	<1
Ethyl Benzene	<1	<1	<5	<5	<1
Methylene Chloride	<1	<1	<5	<5	<1
1,1,1,2-Tetrachloroethane	<1	<1	<5	<5	<1
1,1,2,2-Tetrachloroethane	<1	<1	<5	<5	<1
Tetrachloroethylene	<1	<1	<5	<5	<1
Toluene	<1	<1	<5	<5	<1
1,1,1-Trichloroethane	<1	<1	<5	<5	<1
1,1,2-Trichloroethane	<1	<1	<5	<5	<1
Trichloroethylene	<1	<1	<5	<5	<1
Trichlorofluoromethane	<1	<1	<5	<5	<1
1,2,3-Trichloropropane	<1	<1	<5	<5	<1
Vinyl Chloride	<1	<1	<5	<5	<1
o-Xylene	<1	<1	<5	<5	<1
p,m-Xylene	<1	<1	<5	<5	<1
SAMPLE NUMBER	GN950764	GN950769*	GN950797**	GN940820	GN950837

* EPA 601/602 ANALYSIS PERFORMED ON THIS SAMPLE
**EPA 624 ANALYSIS PERFORMED ON THIS SAMPLE

NEW BOSTON AS, NH

WASTEWATER CHARACTERIZATION SURVEY: 19 JUN - 24 JUNE 1995

TABLE DB - 2 SITE 2: PLANT INFLUENT

	COLLECTION DATE	COLLECTION DATE
EPA METHOD 625 (ug/L)	TUES, 20 JUN 1995	THUR, 22 JUN 95
Acenaphthene	<5	<6
Acenaphthylene	<5	<6
Anthracene	<5	<6
Aroclor 1260	<50	<60
Benzidine	<30	<30
Benzo(a)anthracene	<5	<6
Benzo(b)fluoranthene	<5	<6
Benzo(k)fluoranthene	<5	<6
Benzo(a)pyrene	<5	<6
Benzo(ghi)perylene	<5	<6
Benzyl butyl phthalate	<5	<6
Bis(2-chloroethyl)ether	<5	<6
Bis(2-chloroethoxy)methane	<5	<6
Bis(2-ethylhexyl)phthalate	20	50
Bis(2-chloroisopropyl)ether	<5	<6
4-Bromophenyl phenyl ether	<5	<6
2-Chloronaphthalene	<5	<6
4-Chlorophenyl phenyl ether	<5	<6
Chrysene	<5	<6
Dibenzo(a,h)anthracene	<5	<6
Di-n-butylphthalate	<5	<6
1,2-Dichlorobenzene	<5	<6
1,3-Dichlorobenzene	<5	<6
1,4-Dichlorobenzene	<5	<6
3,3-Dichlorobenzidine	<40	<50
Diethyl phthalate	<5	<6
Dimethyl phthalate	<10	<10
2,4-Dinitrotoluene	<5	<6
2,6-Dinitrotoluene	<5	<6
Di-n--octyl phthalate	<5	<6
Fluoranthene	<5	<6
Fluorene	<5	<6
Hexachlorobenzene	<5	<6
Hexachlorobutadiene	<5	<6
Hexachlorocyclopentadiene	<5	<6
Hexachloroethane	<5	<6
Indeno(1,2,3-cd)pyrene	<5	<6
Isophorone	<5	<6
Naphthalene	<5	<6
Nitrobenzene	<5	<6
N-Nitrosodimethylamine	<5	<6
N-Nitrosodi-n-propylamine	<5	<6
N-Nitrosodiphenylamine	<5	<6
Phenanthrene	<5	<6
Pyrene	<5	<6
1,2,4-Trichlorobenzene	<5	<6
4-Chloro-3-methylphenol	<5	<6
2-Chlorophenol	<5	<6
2,4-Dichlorophenol	<5	<6
2,4-Dimethylphenol	<5	<6
2,4-Dinitrophenol	<20	<20
2-Methyl-4,6-dinitrophenol	<20	<20
2-Nitrophenol	<5	<6
4-Nitrophenol	<20	<20
Pentachlorophenol	<20	<20
Phenol	<5	<6
2,4,6-Trichlorophenol	<5	<6
SAMPLE NUMBER	GN950765	GN950821

COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
EPA METHOD 608 (ug/L)	TUES, 20 JUN 1995	THUR, 22 JUN 95
Aldrin	<0.01	<0.01
alpha-BHC	<0.02	<0.01
beta-BHC	<0.01	<0.01
delta-BHC	<0.01	<0.01
Lindane (gamma-BHC)	<0.01	<0.01
Chlordane	<0.01	<0.05
4,4' DDD	<0.05	<0.01
4,4' DDE	<0.01	<0.01
4,4'-DDT	<0.01	<0.01
Dieldrin	<0.01	<0.01
Endosulfan I	<0.01	<0.01
Endosulfan II	<0.01	<0.01
Endosulfan Sulfate	<0.01	<0.01
Endrin	<0.01	<0.01
Endrin Aldehyde	<0.01	<0.01
Heptachlor	<0.01	<0.01
Heptachlor Epoxide	<0.01	<0.01
Methyoxychlor	<0.05	<0.05
Texaphene	<1	<1
Aroclor 1016	<0.5	<0.5
Aroclor 1221	<0.5	<0.5
Aroclor 1232	<0.5	<0.5
Aroclor 1242	<0.5	<0.5
Aroclor 1248	<0.5	<0.5
Aroclor 1254	<0.5	<0.5
Aroclor 1260	<0.5	<0.5
SAMPLE NUMBER	GN950763	GN950819

NEW BOSTON AS, NH

WASTEWATER CHARACTERIZATION SURVEY: 19 JUN - 24 JUNE 1995

TABLE DC - 1 SITE 3: POWER PLANT

	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
GROUP A & B ANALYTES (mg/L)	WED, 21 JUN 95	THUR, 22 JUN 95	FRI, 23 JUN 95
Chemical Oxygen Demand	169	99	360
Oil and Grease	10.4	9.9	14.96
Total Petroleum Hydrocarbon	1.8	1.7	1.64
GROUP E ANALYTES (ug/L)			
Phenols	59	38	<10
GROUP F ANALYTES (mg/L)			
Aluminum	0.264	0.273	0.408
Antimony	<0.006	<0.006	<0.006
Arsenic	<0.010	<0.010	<0.010
Barium	<0.050	<0.050	<0.050
Beryllium	<0.004	<0.004	<0.004
Cadmium	<0.005	<0.005	<0.005
Total Chromium	<0.010	<0.010	0.144
Cobalt	<0.050	<0.050	<0.050
Copper	0.158	0.176	0.193
Iron	4.34	3.08	0.403
Lead	0.077	0.083	0.15
Manganese	0.069	0.063	0.129
Mercury	<0.0002	<0.002	<0.0002
Molybdenum	<0.030	<0.030	0.05
Nickel	0.038	0.031	0.209
Selenium	<0.010	<0.010	<0.010
Silver	<0.010	<0.010	<0.010
Thallium	<0.002	<0.002	<0.002
Titanium	<0.050	<0.050	<0.050
Vanadium	<0.050	<0.050	<0.050
Zinc	0.515	0.354	0.606
ON SITE ANALYSES			
pH (units)	6.5		7.2
Temperature (°C)	69.7°F	20	19
Group G (mg/L)			
Residue Total	NOT REQUESTED	NOT REQUESTED	NOT REQUESTED
Residue, Filterable (TDS)	NOT REQUESTED	NOT REQUESTED	NOT REQUESTED
Residue, Nonfilterable (TSS)	NOT REQUESTED	NOT REQUESTED	NOT REQUESTED
SAMPLE NUMBERS	CN950770, CN950771	CN950798, CN950799	CN950822, CN950823
	GN950772	GN950800	GN950824
EPA METHOD 601/602	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)	WED, 21 JUN 95	THUR, 22 JUN 95	FRI, 23 JUN 95
Benzene	<1.0	<1.0	<1.0
Benzyl Chloride	<1.0	<1.0	<1.0
Bromobenzene	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0
Carbon tetrachloride	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0
2-Chlorethylvinyl Ether	<1.0	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0
Dibromomethane	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0
Dichlorodifluoromethane	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0
Methylene Chloride	<1.0	<1.0	<1.0
1,1,1,2-Tetrachloroethane	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0
Tetrachloroethylene	<1.0	<1.0	<1.0
Toluene	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0
Trichloroethylene	<1.0	<1.0	<1.0
Trichlorofluoromethane	<1.0	<1.0	<1.0
1,2,3-Trichloropropane	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0
o-Xylene	<1.0	<1.0	<1.0
m-Xylene	<1.0	<1.0	<1.0
p-Xylene	<1.0	<1.0	<1.0
SAMPLE NUMBER	GN950773	GN950801	GN950825

NEW BOSTON AS, NH

WASTEWATER CHARACTERIZATION SURVEY: 19 JUN - 24 JUNE 1995

TABLE DD - 1 SITE 4 CIVIL ENGINEERING AND BUILDING 100

	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
GROUP A & B ANALYTES (mg/L)	WED, 21 JUN 95	THUR, 22 JUN 95	FRI, 23 JUN 95
Chemical Oxygen Demand	162	236	343
Oil and Grease	36.4	3.1	2.32
Total Petroleum Hydrocarbon	19.2	<1	<1
GROUP E ANALYTES (ug/L)			
Phenols	14	<10	<10
GROUP F ANALYTES (mg/L)			
Aluminum	0.98	0.764	0.15
Antimony	<0.006	<0.006	<0.006
Arsenic	<0.010	<0.010	<0.010
Barium	0.119	0.088	0.085
Beryllium	<0.004	<0.004	<0.004
Cadmium	<0.005	<0.005	<0.005
Total Chromium	<0.010	<0.010	<0.010
Cobalt	<0.050	<0.050	<0.050
Copper	1.4	0.285	0.168
Iron	8.85	1.66	1.21
Lead	0.039	<0.020	0.063
Manganese	0.188	0.123	0.069
Mercury	<0.0002	<0.0002	<0.0002
Molybdenum	2.2	2.34	2.54
Nickel	0.087	0.038	0.045
Selenium	<0.010	<0.010	<0.010
Silver	<0.010	<0.010	<0.010
Thallium	<0.002	<0.002	<0.002
Titanium	<0.050	<0.050	<0.050
Vanadium	<0.050	<0.050	<0.050
Zinc	1.27	0.726	0.585
ON SITE ANALYSES			
pH (units)	6.8		
Temperature (°C)	66.4°F		21
Group G (mg/L)			
Residue Total	NOT REQUESTED	NOT REQUESTED	NOT REQUESTED
Residue, Filterable (TDS)	NOT REQUESTED	NOT REQUESTED	NOT REQUESTED
Residue, Nonfilterable (TSS)	NOT REQUESTED	NOT REQUESTED	NOT REQUESTED
SAMPLE NUMBERS	CN950774,CN950775	CN950802,CN950803	CN950826,CN940827
	GN950776	GN950804	GN950828

EPA METHOD 601/602	COLLECTION DATE	COLLECTION DATE	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)	WED, 21 JUN 95	THUR, 22 JUN 95	FRI, 23 JUN 95
Benzene	<1.0	<1.0	<1.0
Benzyl Chloride	<1.0	<1.0	<1.0
Bromobenzene	<1.0	<1.0	<1.0
Bromodichloromethane	<1.0	<1.0	<1.0
Bromoform	<1.0	<1.0	<1.0
Bromomethane	<1.0	<1.0	<1.0
Carbon tetrachloride	<1.0	<1.0	<1.0
Chlorobenzene	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0
Chloroethane	<1.0	<1.0	<1.0
Chloroform	<1.0	<1.0	<1.0
2-Chlorethylvinyl Ether	<1.0	<1.0	<1.0
Chloromethane	<1.0	<1.0	<1.0
Chlorodibromomethane	<1.0	<1.0	<1.0
Dibromomethane	<1.0	<1.0	<1.0
1,2-Dichlorobenzene	<1.0	<1.0	<1.0
1,3-Dichlorobenzene	<1.0	<1.0	<1.0
1,4-Dichlorobenzene	<1.0	<1.0	<1.0
Dichlorodifluoromethane	<1.0	<1.0	<1.0
1,1-Dichloroethane	<1.0	<1.0	<1.0
1,2-Dichloroethane	<1.0	<1.0	<1.0
1,1-Dichloroethene	<1.0	<1.0	<1.0
Trans-1,2-Dichloroethene	<1.0	<1.0	<1.0
1,2-Dichloropropane	<1.0	<1.0	<1.0
Cis-1,3-Dichloropropene	<1.0	<1.0	<1.0
Trans-1,3-Dichloropropene	<1.0	<1.0	<1.0
Ethyl Benzene	<1.0	<1.0	<1.0
Methylene Chloride	<1.0	<1.0	<1.0
1,1,1,2-Tetrachloroethane	<1.0	<1.0	<1.0
1,1,2,2-Tetrachloroethane	<1.0	<1.0	<1.0
Tetrachloroethylene	<1.0	<1.0	<1.0
Toluene	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	<1.0	<1.0	<1.0
Trichloroethylene	<1.0	<1.0	<1.0
Trichlorofluoromethane	<1.0	<1.0	<1.0
1,2,3-Trichloropropane	<1.0	<1.0	<1.0
Vinyl Chloride	<1.0	<1.0	<1.0
o-Xylene	<1.0	<1.0	<1.0
m-Xylene	<1.0	<1.0	<1.0
p-Xylene	<1.0	<1.0	<1.0
SAMPLE NUMBER	GN950777	GN950805	GN950829

NEW BOSTON AS, NH

WASTEWATER CHARACTERIZATION SURVEY:

19 JUN - 24 JUNE 1995

TABLE DE - 1 SITE 5G RADAR SITE

	COLLECTION DATE
GROUP A & B ANALYTES (mg/L)	WED, 21 JUN 95
Chemical Oxygen Demand	139
Oil and Grease	15.8
Total Petroleum Hydrocarbon	3.9
GROUP E ANALYTES (ug/L)	
Phenols	123
GROUP F ANALYTES (mg/L)	
Aluminum	0.124
Antimony	<0.006
Arsenic	<0.010
Barium	0.016
Beryllium	<0.004
Cadmium	<0.005
Total Chromium	<0.010
Cobalt	<0.050
Copper	0.03
Iron	0.774
Lead	<0.02
Manganese	0.033
Mercury	<0.0002
Molybdenum	<0.030
Nickel	<0.030
Selenium	<0.010
Silver	<0.010
Thallium	<0.002
Titanium	<0.050
Vanadium	<0.050
Zinc	0.706
ON SITE ANALYSES	
pH (units)	7
Temperature (°F)	62°F
Group G (mg/L)	
Residue Total	NOT REQUESTED
Residue, Filterable (TDS)	NOT REQUESTED
Residue, Nonfilterable (TSS)	NOT REQUESTED
SAMPLE NUMBERS	GN950778, GN950779
	GN950780
EPA METHOD 601/602	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)	WED, 21 JUN 95
Benzene	<1.0
Benzyl Chloride	<1.0
Bromobenzene	<1.0
Bromodichloromethane	<1.0
Bromoform	<1.0
Bromomethane	<1.0
Carbon tetrachloride	<1.0
Chlorobenzene	<1.0
Chlorodibromomethane	<1.0
Chloroethane	<1.0
Chloroform	1.76
2-Chlorethylvinyl Ether	<1.0
Chloromethane	<1.0
Chlorodibromomethane	<1.0
Dibromomethane	<1.0
1,2-Dichlorobenzene	<1.0
1,3-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
Dichlorodifluoromethane	<1.0
1,1-Dichloroethane	<1.0
1,2-Dichloroethane	<1.0
1,1-Dichloroethene	<1.0
Trans-1,2-Dichloroethene	<1.0
1,2-Dichloropropane	<1.0
Cis-1,3-Dichloropropene	<1.0
Trans-1,3-Dichloropropene -	<1.0
Ethyl Benzene	<1.0
Methylene Chloride	1.17
1,1,1,2-Tetrachloroethane	<1.0
1,1,2,2-Tetrachloroethane	<1.0
Tetrachloroethylene	<1.0
Toluene	15.92
1,1,1-Trichloroethane	<1.0
1,1,2-Trichloroethane	<1.0
Trichloroethylene	<1.0
Trichlorofluoromethane	<1.0
1,2,3-Trichloropropane	<1.0
Vinyl Chloride	<1.0
o-Xylene	<1.0
m-Xylene	<1.0
p-Xylene	<1.0
SAMPLE NUMBER	GN950781

NEW BOSTON AS, NH

WASTEWATER CHARACTERIZATION SURVEY:

19 JUN - 24 JUNE 1995

BLE DF - 1 SITE 6 VEHICLE MAINTENANCE

	COLLECTION DATE
GROUP A & B ANALYTES (mg/L)	WED, 21 JUN 95
Chemical Oxygen Demand	326
Oil and Grease	33.2
Total Petroleum Hydrocarbon	26.4
GROUP E ANALYTES (ug/L)	
Phenols	70
GROUP F ANALYTES (mg/L)	
Aluminum	0.449
Antimony	<0.006
Arsenic	<0.010
Barium	<0.050
Beryllium	<0.004
Cadmium	<0.005
Total Chromium	<0.010
Cobalt	<0.050
Copper	0.05
Iron	9.08
Lead	0.023
Manganese	0.321
Mercury	<0.002
Molybdenum	<0.030
Nickel	0.078
Selenium	<0.010
Silver	<0.010
Thallium	<0.002
Titanium	<0.050
Vanadium	<0.050
Zinc	0.518
ON SITE ANALYSES	
pH (units)	6.5
Temperature (°F)	22°C
Group G (mg/L)	
Residue Total	NOT REQUESTED
Residue, Filterable (TDS)	NOT REQUESTED
Residue, Nonfilterable (TSS)	NOT REQUESTED
SAMPLE NUMBERS	GN950782, GN950783
	GN950784
EPA METHOD 601/602	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)	WED, 21 JUN 95
Benzene	<1.0
Benzyl Chloride	<1.0
Bromobenzene	<1.0
Bromodichloromethane	<1.0
Bromoform	<1.0
Bromomethane	<1.0
Carbon tetrachloride	<1.0
Chlorobenzene	<1.0
Chlorodibromomethane	<1.0
Chloroethane	<1.0
Chloroform	<1.0
2-Chlorethylvinyl Ether	<1.0
Chloromethane	<1.0
Chlorodibromomethane	<1.0
Dibromomethane	<1.0
1,2-Dichlorobenzene	<1.0
1,3-Dichlorobenzene	<1.0
1,4-Dichlorobenzene	<1.0
Dichlorodifluoromethane	<1.0
1,1-Dichloroethane	<1.0
1,2-Dichloroethane	<1.0
1,1-Dichloroethene	<1.0
Trans-1,2-Dichloroethene	<1.0
1,2-Dichloropropane	<1.0
Cis-1,3-Dichloropropene	<1.0
Trans-1,3-Dichloropropene	<1.0
Ethyl Benzene	<1.0
Methylene Chloride	<1.0
1,1,1,2-Tetrachloroethane	<1.0
1,1,2,2-Tetrachloroethane	<1.0
Tetrachloroethylene	<1.0
Toluene	1.98
1,1,1-Trichloroethane	<1.0
1,1,2-Trichloroethane	<1.0
Trichloroethylene	<1.0
Trichlorofluoromethane	<1.0
1,2,3-Trichloropropane	<1.0
Vinyl Chloride	<1.0
o-Xylene	<1.0
m-Xylene	<1.0
p-Xylene	<1.0
SAMPLE NUMBER	GN950785

NEW BOSTON AS, NH

WASTEWATER CHARACTERIZATION SURVEY: 19 JUN - 24 JUNE 1995

TABLE DG - 1 POTABLE WATER

	COLLECTION DATE		COLLECTION DATE
GROUP A & B ANALYTES (mg/L)	FRI, 23 JUN 95	EPA METHOD 502.2 (ug/L)	FRI, 23 JUN 95
Chemical Oxygen Demand	44	REGULATED	
Oil and Grease	0.64	Benzene	<0.5
Total Petroleum Hydrocarbon	<1	Carbon Tetrachloride	<0.5
		1,4-Dichlorobenzene	<0.5
GROUP C ANALYTES (mg/L)		1,2-Dichloroethane	<0.5
Ammonia	<0.2	1,1,-Dichloroethene	<0.5
Kjeddahl Nitrogen	0.5	1,1,1-Trichloroethane	<0.5
Nitrate/Nitrite	0.2	Trichloroethylene	<0.5
Total Phosphorus	<0.10	Vinyl Chloride	<0.5
		Chlorobenzene	<0.5
GROUP E ANALYTES (ug/L)		1,2-Dichlorobenzene	<0.5
Phenols	43	cis-1,2-Dichloroethene	<0.5
		trans-1,2-Dichloroethen	<0.5
GROUP F ANALYTES (mg/L)		1,2-Dichloropropane	<0.5
Aluminum	<0.030	Ethyl Benzene	<0.5
Antimony	<0.006	Methylene Chloride	<0.5
Arsenic	<0.010	Styrene	<0.5
Barium	<0.05	Tetrachlorethylene	<0.5
Beryllium	<0.004	Toluene	<0.5
Cadmium	<0.005	1,2,4-Trichlorobenzene	<0.5
Total Chromium	<0.010	1,1,2-Trichloroethane	<0.5
Cobalt	<0.05	o-Xylene	<0.5
Copper	0.365	m-Xylene	<0.5
Iron	0.201	p-Xylene	<0.5
Lead	0.014	UNREGULATED	
Manganese	<0.030	Bromodichloromethane	2
Mercury	<0.0002	Chloroform	1.5
Molybdenum	<0.030	Chlorodibromomethane	2.7
Nickel	<0.010	Bromobenzene	<0.5
Selenium	<0.010	Bromochloromethane	<0.5
Silver	<0.010	Bromoform	1
Thallium	<0.002	Bromomethane	<0.5
Titanium	<0.050	n-Butylbenzene	<0.5
Vanadium	<0.050	sec-Butylbenzene	<0.5
Zinc	0.118	tert-Butylbenzene	<0.5
		Chloroethane	<0.5
Group G (mg/L)		Chloromethane	<0.5
Acidity Total	4	2-Chlorotoluene	<0.5
Alkalinity Total	18	4-Chlorotoluene	<0.5
Bromide	<0.5	Dibromomethane	<0.5
Residue Total	616	1,3-Dichlorobenzene	<0.5
Residue , Filterable (TDS)	540	Dichlorodifluoromethane	<0.5
Residue, Nonfilterable (TSS)	3	1,1-Dichloroethane	<0.5
Residue, Settleable	<0.2	cis-1,3-Dichloropropene	<0.5
Residue, Volatile	184	trans-1,3-Dichloropropene	<0.5
Sulfate	12	1,3-Dichloropropane	<0.5
		2,2-Dichloropropane	<0.5
ON SITE ANALYSES		1,1-Dichloropropene	<0.5
pH (units)		Hexachlorobutadiene	<0.5
Temperature (°F)		Isopropylbenzene	<0.5
		p-Cymene	<0.5
		Naphthalene	<0.5
SAMPLE NUMBERS	GP950840	n-Propylbenzene	<0.5
	GP950838	1,1,1,2-Tetrachloroethane	<0.5
	GP950839	1,1,2,2-Tetrachloroethane	<0.5
		1,2,3-Trichlorobenzene	<0.5
		Trichlorofluoromethane	<0.5
GROUP F ANALYTES (mg/L)	BARRACK 502	1,2,3-Trichloropropane	<0.5
Copper	0.113	1,2,4-Trimethylbenzene	<0.5
Lead	0.049	1,3,5-Trimethylbenzene	<0.5
ON SITE ANALYSES			
pH (units)	6.8	SAMPLE NUMBER	GP950841
Temperature (°F)	69.4		
SAMPLE NUMBERS	GP950858		
GROUP F ANALYTES (mg/L)	BARRACKS 501		
Copper	0.016		
Lead	0.022		
Before Running Water		After Running 2 to 3 minutes Water	
ON SITE ANALYSES		ON SITE ANALYSES	
pH (units)	6.2	pH (units)	6.2
Temperature (°F)	69.4	Temperature (°F)	68.5
SAMPLE NUMBERS	GP950859		

NEW BOSTON AS, NH

WASTEWATER CHARACTERIZATION SURVEY: 19 JUN - 24 JUNE 1995

TABLE DH -1 TRIP BLANK & ACID REAGENT BLANKS

	SULFURIC ACID
	COLLECTION DATE
GROUP A & B ANALYTES (mg/L)	FRI, 23 JUN 95
Chemical Oxygen Demand	38
Oil and Grease	0.72
Total Petroleum Hydrocarbon	<1
GROUP C ANALYTES (mg/L)	
Ammonia	<0.2
Kjeddahl Nitrogen	0.5
Nitrate/Nitrite	0.16
Total Phosphorus	<0.10
GROUP E ANALYTES (ug/L)	
Phenols	<10
GROUP F ANALYTES (mg/L)	NITRIC ACID
Aluminum	<0.030
Antimony	<0.006
Arsenic	<0.010
Barium	<0.050
Beryllium	<0.004
Cadmium	<0.005
Calcium	<1
Total Chromium	0.248
Cobalt	<0.050
Copper	<0.020
Iron	1.09
Lead	<0.020
Manganese	0.051
Mercury	<0.0002
Molybdenum	<0.030
Nickel	0.385
Selenium	<0.010
Silver	<0.010
Thallium	<0.002
Titanium	<0.050
Vanadium	<0.050
Zinc	<0.050
SAMPLE NUMBERS	GN950855,GN950856

	HCL BLANK
EPA METHOD 624	COLLECTION DATE
VOLATILE COMPOUNDS (ug/L)	FRI, 23 JUN 95
Benzene	<5
Benzyl Chloride	<5
Bromobenzene	<5
Bromodichloromethane	<5
Bromoform	<5
Bromomethane	<5
Carbon tetrachloride	<5
Chlorobenzene	<5
Chlorodibromomethane	<5
Chloroethane	<5
Chloroform	<5
2-Chlorethylvinyl Ether	<5
Chloromethane	<5
Chlorodibromomethane	<5
Dibromomethane	<5
1,2-Dichlorobenzene	<5
1,3-Dichlorobenzene	<5
1,4-Dichlorobenzene	<5
Dichlorodifluoromethane	<5
1,1-Dichloroethane	<5
1,2-Dichloroethane	<5
1,1-Dichloroethene	<5
Trans-1,2-Dichloroethene	<5
1,2-Dichloropropane	<5
Cis-1,3-Dichloropropene	<5
Trans-1,3-Dichloropropene	<5
Ethyl Benzene	<5
4-Isopropyltoluene	<5
Methylene Chloride	<5
1,1,1,2-Tetrachloroethane	<5
1,1,2,2-Tetrachloroethane	<5
Tetrachloroethylene	<5
Toluene	<5
1,1,1-Trichloroethane	<5
1,1,2-Trichloroethane	<5
Trichloroethylene	<5
Trichlorofluoromethane	<5
1,2,3-Trichloropropane	<5
Vinyl Chloride	<5
SAMPLE NUMBER	GN950857

	TRIP BLANK
	COLLECTION DATE
EPA METHOD 502.2 (ug/L)	FRI, 23 JUN 95
REGULATED	
Benzene	<0.5
Carbon Tetrachloride	<0.5
1,4-Dichlorobenzene	<0.5
1,2-Dichloroethane	<0.5
1,1,-Dichloroethene	<0.5
1,1,1-Trichloroethane	<0.5
Trichloroethylene	<0.5
Vinyl Chloride	<0.5
Chlorobenzene	<0.5
1,2-Dichlorobenzene	<0.5
cis-1,2-Dichloroethene	<0.5
trans-1,2-Dichloroethen	<0.5
1,2-Dichloropropane	<0.5
Ethyl Benzene	<0.5
Methylene Chloride	<0.5
Styrene	<0.5
Tetrachlorethylene	<0.5
Toluene	<0.5
1,2,4-Trichlorobenzene	<0.5
1,1,2-Trichloroethane	<0.5
o-Xylene	<0.5
m-Xylene	<0.5
p-Xylene	<0.5
UNREGULATED	
Bromodichloromethane	<0.5
Chloroform	<0.5
Chlorodibromomethane	<0.5
Bromobenzene	<0.5
Bromochloromethane	<0.5
Bromoform	<0.5
Bromomethane	<0.5
n-Butylbenzene	<0.5
sec-Butylbenzene	<0.5
tert-Butylbenzene	<0.5
Chloroethane	<0.5
Chloromethane	<0.5
2-Chlorotoluene	<0.5
4-Chlorotoluene	<0.5
Dibromomethane	<0.5
1,3-Dichlorobenzene	<0.5
Dichlorodifluoromethane	<0.5
1,1-Dichloroethane	<0.5
cis-1,3-Dichloropropene	<0.5
trans-1,3-Dichloropropene	<0.5
1,3-Dichloropropane	<0.5
2,2-Dichloropropane	<0.5
1,1-Dichloropropene	<0.5
Hexachlorobutadiene	<0.5
Isopropylbenzene	<0.5
p-Cymene	<0.5
Naphthalene	<0.5
n-Propylbenzene	<0.5
1,1,1,2-Tetrachloroethane	<0.5
1,1,2,2-Tetrachloroethane	<0.5
1,2,3-Trichlorobenzene	<0.5
Trichlorofluoromethane	<0.5
1,2,3-Trichloropropane	<0.5
1,2,4-Trimethylbenzene	<0.5
1,3,5-Trimethylbenzene	<0.5
SAMPLE NUMBER	GP950854

NEW BOSTON AS, NH

WASTEWATER CHARACTERIZATION SURVEY: 19 JUN - 24 JUNE 1995

TABLE DI - 1 EQUIPMENT BLANK SAMPLES

	PITCHER BLANK	SAMPLER BLANK
	COLLECTION DATE	COLLECTION DATE
GROUP A & B ANALYTES (mg/L)	FRI, 23 JUN 95	FRI, 23 JUN 95
Chemical Oxygen Demand	50	42
Oil and Grease	1.28	NOT REQUESTED
Total Petroleum Hydrocarbon	<1	NOT REQUESTED
-		
GROUP C ANALYTES (mg/L)		
Ammonia	<0.2	<0.2
Kjeddahl Nitrogen	0.3	0.2
Nitrate/Nitrite	<0.1	<0.1
Total Phosphorus	<0.10	<0.10
GROUP E ANALYTES (ug/L)		
Phenols	<10	159
GROUP F ANALYTES (mg/L)		
Aluminum	<0.030	<0.030
Antimony	<0.006	<0.006
Arsenic	<0.010	<0.010
Barium	<0.050	<0.050
Beryllium	<0.004	<0.004
Cadmium	<0.005	<0.005
Total Chromium	0.031	0.012
Cobalt	<0.050	<0.050
Copper	<0.020	<0.020
Iron	0.194	0.078
Lead	<0.020	<0.020
Manganese	<0.030	<0.030
Mercury	<0.0002	<0.0002
Molybdenum	<0.030	<0.030
Nickel	0.169	0.112
Selenium	<0.010	<0.010
Silver	<0.010	<0.010
Thallium	<0.002	<0.002
Titanium	<0.050	<0.050
Vanadium	<0.050	<0.050
Zinc	<0.050	<0.050
Group G (mg/L)		
Acidity Total	2	
Alkalinity Total	4	
Bromide	<0.5	
Residue Total	18	
Residue , Filterable (TDS)	20	
Residue, Nonfilterable (TSS)	<1	
Residue, Settleable	<0.2	
Residue, Volatile	12	
Sulfate	<1	
SAMPLE NUMBERS	GN950850	GN950848
	GN950851	GN950849
	GN950852	

	PITCHER BLANK
	COLLECTION DATE
EPA METHOD 502.2 (ug/L)	FRI, 23 JUN 95
REGULATED	<0.5
Benzene	<0.5
Carbon Tetrachloride	<0.5
1,4-Dichlorobenzene	<0.5
1,2-Dichloroethane	<0.5
1,1,-Dichloroethene	<0.5
1,1,1-Trichloroethane	<0.5
Trichloroethylene	<0.5
Vinyl Chloride	<0.5
Chlorobenzene	<0.5
1,2-Dichlorobenzene	<0.5
cis-1,2-Dichloroethene	<0.5
trans-1,2-Dichloroethen	<0.5
1,2-Dichloropropane	<0.5
Ethyl Benzene	<0.5
Methylene Chloride	<0.5
Styrene	<0.5
Tetrachlorethylene	<0.5
Toluene	<0.5
1,2,4-Trichlorobenzene	<0.5
1,1,2-Trichloroethane	<0.5
o-Xylene	<0.5
m-Xylene	<0.5
p-Xylene	<0.5
UNREGULATED	<0.5
Bromodichloromethane	<0.5
Chloroform	<0.5
Chlorodibromomethane	<0.5
Bromobenzene	<0.5
Bromochloromethane	<0.5
Bromoform	<0.5
Bromomethane	<0.5
n-Butylbenzene	<0.5
sec-Butylbenzene	<0.5
tert-Butylbenzene	<0.5
Chloroethane	<0.5
Chloromethane	<0.5
2-Chlorotoluene	<0.5
4-Chlorotoluene	<0.5
Dibromomethane	<0.5
1,3-Dichlorobenzene	<0.5
Dichlorodifluoromethane	<0.5
1,1-Dichloroethane	<0.5
cis-1,3-Dichloropropene	<0.5
trans-1,3-Dichloropropene	<0.5
1,3-Dichloropropane	<0.5
2,2-Dichloropropane	<0.5
1,1-Dichloropropene	<0.5
Hexachlorobutadiene	<0.5
Isopropylbenzene	<0.5
p-Cymene	<0.5
Naphthalene	<0.5
n-Propylbenzene	<0.5
1,1,1,2-Tetrachloroethane	<0.5
1,1,2,2-Tetrachloroethane	<0.5
1,2,3-Trichlorobenzene	<0.5
Trichlorofluoromethane	3.9
1,2,3-Trichloropropane	<0.5
1,2,4-Trimethylbenzene	<0.5
1,3,5-Trimethylbenzene	<0.5
SAMPLE NUMBER	GP950853

NEW BOSTON AS, NH

WASTEWATER CHARACTERIZATION SURVEY: 19 JUN - 24 JUNE 1995

DJ -1 SAMPLE SPIKES

	COLLECTION DATE	COLLECTION DATE	VALUE RANGE
GROUP A & B ANALYTES (mg/L)	FRI, 23 JUN 95	FRI, 23 JUN 95	
Chemical Oxygen Demand	222	181	133-181
Oil and Grease	68.8	110	33.6-70 mg/bt
Total Petroleum Hydrocarbon	54.1		
GROUP C ANALYTES (mg/L)			
Ammonia	2.6	2.5	2.42-3.34
Kjeddahl Nitrogen	3.3	3.3	5.74-8.26
Nitrate/Nitrite	4.26	4.46	3.88-5.24
Total Phosphorus	4.4	4.4	5.98-7.92
GROUP E ANALYTES (ug/L)			
Phenols	NO SPIKES	NO SPIKES	N/A
GROUP F ANALYTES (mg/L)			in ug/l
Aluminum	0.496	0.556	424-610
Antimony	0.088	0.105	65.6-103
Arsenic	0.096	0.105	81-128
Barium	0.137	0.156	130-187
Beryllium	0.104	0.119	95.7-138
Cadmium	0.089	0.103	85.4-123
Total Chromium	0.166	0.194	157-226
Cobalt	0.133	0.152	126-182
Copper	0.147	0.169	144-207
Iron	0.207	0.257	185-266
Lead	0.129	0.148	116-167
Manganese	0.097	0.12	96-138
Mercury	0.001	0.002	2.50-4.17
Molybdenum	0.155	0.172	144-207
Nickel	0.146	0.23	137-197
Selenium	0.086	0.101	81.3-128
Silver	0.107	0.121	106-152
Thallium	0.076	0.084	65.6-103
Titanium	<0.050	<0.050	
Vanadium	0.221	0.251	212-305
Zinc	0.133	0.155	126-182
Group G (mg/L)			
Acidity Total	QNS	2	Not Spiked*
Alkalinity Total	4	5	Not Spiked*
Bromide	<0.5	<0.5	Not Spiked*
Residue Total		474	386-467
Residue , Filterable (TDS)		414	359-467
Residue, Nonfilterable (TSS)		22	28.1-35.2
Residue, Settleable		<0.2	Not Spiked*
Residue, Volatile		36	Not Spiked*
Sulfate	43	1	50 mg/l
SAMPLE NUMBERS	GN950842	GN950845	
	GN950843	GN950846	
	GN950844	GN950847	
	LOT # 9962	LOT # 9962	
	FOR METALS	FOR METALS	
	COD,TKN,NITRATE/	COD,TKN,NITRATE/	
	NITRITE, AMMONIA	NITRITE, AMMONIA	
	TOTAL PHOSPHORUS	TOTAL PHOSPHORUS	
	LOT # WP1180	LOT # WP1180	
	TDS,TSS&TOTAL	TDS,TSS&TOTAL	
	RESIDUE	RESIDUE	
	LOT # 9962	LOT # 9962	
	OIL & GREASE	OIL & GREASE	

QNS: Quantity not sufficient for analysis
*The prepared spikes were not spiked for these parameters