Marine Corps Base Camp Lejeune chronology of significant events concerning contamination of the base drinking water supply©. Part 1 1941 through October 1989. Compiled by Mike Partain for use by WWW.TFTPTF.COM

Introduction – This time line was compiled by means of public documents available from the CERCLA and CLW files kept under requirements of Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980. There are many documents that still have not been released or are currently being suppressed from public view. As these documents become available, we will update this time line and promptly post it on our website.

We are currently working towards completing the second installment of this time line. The research needed to untangle the many documents, errors, hidden information and obfuscation of facts will take some time. We will post the second portion of the time line as soon as it becomes available.

1941 – Hadnot Point Fuel Farm Constructed southeast of Holcomb Blvd adjacent to Ash street. The fuel farm was comprised of 15 fuel tanks. There was one 600,000 gallon above ground tank, six underground 12,000 gallon tanks, and eight underground 15,000 gallon tanks. The underground tanks were placed at grade and completely covered with soil. The above ground tank stored diesel fuel while the other tanks stored gasoline, unleaded gasoline and kerosene. The tanks were located in a highly developed area of the base where natural drainage had been modified by extensive areas of asphalt, concrete, ditches and storm sewers. Hadnot Point supply well HP-602 was located 1,200 feet northwest of the Hadnot Point Fuel Farm. Marine Corps records indicate that 20,000 to 33,150 gallons of fuel were lost over the course of the fuel farm's operation. This estimate did not include or account for product lost during transfers or unreported leaks. **(Cercla 417).**

1950-1952 Installation of Tarawa Terrace (TT) well field and construction of Tarawa Terrace subdivision by Spangler Construction. Three of the initial wells were located along Lejeune Blvd down gradient from established gas stations, automobile repair shops and dry cleaners. These businesses (and residences) were at the time, all on septic ground absorptions systems until city sewers were installed in the1970's**. (Bozarth Interview 1994).**

1952- Tarawa Terrace well number TT-26 Constructed. It was located on the base property line along Lejeune Blvd. The well was drilled to a depth of only 95 feet **(CLW 3548)**. Less than a year after construction, ABC Dry Cleaners became operational. The well was now situated less than 900 feet and down gradient from yet another potential contamination source. The well was also down gradient of Glamorama dry cleaners, gasoline stations, and auto repair facilities. In January 1985, this well tested 1580 ppb PCE. **(CLW 5011 + CLW 4810).**

1953 – ABC One Hour Dry Cleaner begins operation at 2127 Lejeune Blvd. The business was located directly across the street from the Tarawa Terrace well fields. According to co-owner Victor Melts, ABC uses 110-165 gallons of Tetrachloroethylene (PCE) per month. The business disposes waste water through an on site septic ground soil absorption system that was located up gradient and directly across the street from the Tarawa Terrace water distribution system's well fields and family housing. The business also generates a solid waste from the PCE reclamation process. This waste was contaminated with PCE and was used as pothole fillers or deposited in the rear of the business from 1953 until 1984. **(VJ Melts Depo 04/01).**

1953 – Possible nerve gas or mustard gas drums were buried near the Rifle Range Chemical dump. According to a 1982 interview with a former civilian employee named Jerry Rochelle, 50-55 drums were buried at the site. Mr. Rochelle noted that the drums were light or bluish green and unmarked. They were protected by rubber matting aboard the trucks and were handled by equipment which had been rubber padded. Mr. Rochelle was required to wear extensive protective gear including a gas mask, hood jacket and gauntlets. He noted that other personnel wore what he called "space suits." The drums were buried five feet below the surface side by sides several rows deep. **(Cercla 280).**

1958 – Legrand preliminary and interim ground water report was published for Marine Corps Base Camp Lejeune (MCBCL). The report establishes that Camp Lejeune's ground water wells were generally effective up to a depth of 250 feet. Below that depth the water was unsuitable for use. It was noted that the use of shallow wells directly alongside Lejeune Blvd would furnish more than the anticipated water supply for Tarawa Terrace. The disadvantage of these wells was that they would require frequent maintenance inspections and repairs. Furthermore, in 1983, the Initial Assessment study for Camp Lejeune stated the soil was composed of fine sand and was extremely permeable with little or no confining layers that would prevent surface generated contaminants from reaching the aquifer. **(CLW 1, CLW 32, CLW 4819-20 & Cercla 1998)**.

1959 – Ed Carper Assumes Administrative control of Camp Lejeune's Chemical Dump. The dump was established in the early to mid 1950's and used as a dump for hazardous materials. The dump was located near the rifle range. Mr. Carper ran the dump until 1965, when Mr. Don Tallman assumed control. Mr. Tallman administered the dump until 1976 when it was closed. Materials disposed of in the dump included but were not limited to TCE and other PPP chemicals. Mr. Tallman noted in his 1982 statement that Base order 5100.13B was expanded in 1974 to include the Air Station. Earlier versions of the order including the order which created the chemical dump and why it was used are now missing. Base Order 5100.13B did clearly establish that hazardous substances such as organic solvents were hazardous and the chemical dump was the designated place for their disposal. **(Cercla 226).**

June 1959 – Legrand Survey and Evaluation of water supply wells at Camp Lejeune. The report states development of the water wells at Lejeune has reached the stage in which continuous technical assistance in ground water hydrology would be worthwhile. A concern was expressed about increased withdrawal of groundwater (including intra-aquifer movement), especially at Hadnot Point, will increase salt-water encroachment. In 1986, MCBCL consulted with the United States Geological Service (USGS) for a survey of the groundwater at the base to assist in planning, development and protection of the groundwater supply aboard the base. **(CLW 102).** The USGS found that there was a very dependable source of water aboard the base. However, the aquifer was not well protected from potential surface contamination because clay layers above the water supply aquifer that might serve as a barrier to contamination are thin and discontinuous. The survey also found that with some relatively inexpensive modifications in the design and positioning of future supply wells could significantly improve well yields and reduce costs. **(Cercla 1998).**

December 1959 – Department of the Navy Bureau of Medicine and Surgery (BUMED) issued instruction 6240.3A; Standards for potable water. This instruction applied to all U.S. Naval vessels and shore installations which included United States Marine Corps (USMC) installations. The standard defined Health Hazard to mean any faulty operating condition including any device or water treatment practice, which when introduced into the water supply system creates or may a create a danger to the well being of the consumer. **(BUMED 6240.3A).**

August 1963 – Department of the Navy's Bureau of Medicine and Surgery (BUMED) issued Navmed P-5010-5, *Manual for Naval Preventive Medicine.* Chapter 5 of this manual is dedicated to Water Supply Ashore for the Navy. The importance of this document is that it is the reference material from which the Navy's own internal potable water standards are derived. BUMED Instruction 6240.3B and version 3C specifically reference the reader to this manual for guidance.(**NAVMED P 5010-5**)

1. Pdf Page 5 identifies BUMED as the responsible entity to determine standards for Naval Potable water.
2. Pdf Page 6 The Commanding Officer is responsible for all phases of the water supply and was assisted by the public works and medical officers. On USMC installations, the maintenance officer is responsible for maintenance and operation of the water works.
3. Pdf Page 17. **Sampling was to be conducted by the Public Works and Medical officers once a year for both raw, treated and if supplied by groundwater wells, from EACH individual well**.
4. Pdf Page 35 Identifies that mounting pollution problems indicate an increased need for attention to the quality of source waters. "Abatement and control of pollution sources will significantly aid in producing drinking water which will be in full compliance with the provisions in these standards".
5. Pdf page 35 "Well water obtained from aquifers beneath impervious strata are usually considered sufficiently protected". 'However, ground waters are becoming polluted with increasing frequency and the resulting hazards require special surveillance."

6. Pdf Page 43. Carbon Chloroform Extract was identified as a "**practical measure of water quality and as a safeguard against the excessive amounts of potentially toxic material**" and afforded " a large measure of **protection against the presence of undetected toxic materials in finished drinking water**." This was a test for total organics present in the water and not for any one specific chemical. The purpose of this test was to identify the total organic content within the water and protect the consumer against possible exposures to toxic compounds.
7. Pdf page 4."**Water supplies containing over 200 ppb CCE/1 of water represent an exceptional and unwarranted dosage of the water consumer with ill defined chemicals.**"

September 1963 - Department of the Navy's Bureau of Medicine and Surgery (BUMED) issued instruction 6240.3B Standards for potable water. Regulations are substantially revised from prior version (6240.3A). The definition of a health hazard is expanded to include an example. The example cited a structural defect in the water supply system by either location, design or construction that prevents the satisfactory purification of the water or causes it to be polluted from extraneous sources. Pollution is defined as the presence of any foreign substance (organic, inorganic, radiological or biological) in the water which tends to degrade its quality so as to constitute a hazard. The instruction also requires substances which may have a deleterious (harmful) physiological effect or for which the physiological effects are not known, shall not be introduced into the water system in a manner which would permit them to reach the consumer**. Water supply wells are defined within the instruction as part of the water system**.

The Carbon Cholorform Extract (CCE) for total organic content permissible in the drinking water was set at 200 ppb. There are no known records in existence indicating these required tests were ever conducted by the Navy. **(BUMED 6240.3B).**

1970 – DDT, trichloroethylene and calcium hypo-chlorate buried in a pit at the rifle range chemical dump. During the burial an explosion occurred which injured the bulldozer operator. The operator required medical treatment for 2 years. **(Cercla 208).**

1972—Hadnot point supply well number 651 installed adjacent to lot 203. Lot 203 was the base Defense Reutilization Management Office (DRMO Lot) i.e….junkyard. The DRMO lot had been in operation for decades and was well establish at the time well HP-651 was constructed in 1971. **(CLW 726)**. Well 651 was drilled to a depth of 199 feet **(CLW 3546)** and became operational in January of 1972. On 4 February 1985, this well tested 400 ppb PCE, 18,900 ppb trichloroethylene (TCE), 7,580 ppb dichlororethylene (DCE) and 168 ppb Vinyl Chloride. **(CLW 5011)**. The Naval Assessment and Control of Institutional Pollutants (NACIP) program's Initial Assessment Study (IAS) of 1983 also identified lot 203 as a dumping ground for dichloro-diphenyl-trichloroethane (DDT) and Polychlorinated B-phenyls (PCB) laden transformers **(CLW 726).**

1972 – Holcomb Boulevard Water Treatment Plant (WTP) and distribution system became operational. Water to Paradise Point, Berkeley Manor, Watkins Village, Midway Park Family housing areas and irrigation water for both of the base's golf courses were now supplied by Holcomb Boulevard water distribution system. Prior to 1972, these same areas were served by the Hadnot Point System. However, Holcomb Blvd water distribution system remained intra-connected with the Hadnot Point water distribution system. This intra-connection was controlled by 2 isolation valves which were located at the bridges which crossed over Wallace Creek on Holcomb Blvd. and the Main Service road by Marston Pavilion. During times of water shortages or system problems, these valves could be opened to allow treated or raw water to flow in either direction to either plant. Recent developments reveal that these valves were frequently activated to allow contaminated Hadnot Point water to enter and be distributed through the Holcomb Blvd water distribution system between 1972 through 1985. The use of treated water to irrigate the base's championship golf course and secondary golf course appears to be the main reason why there was a continual shortage of treated water at Holcomb Blvd. **(CLW 1264).** On 27 January 1985. Holcomb Boulevard suffered a generator fuel spill leak and gasoline was leaked into the water system. The valve(s) interconnecting the 2 systems was/were activated for a nine day period resulting in a documented contamination event for the above cited family housing areas, facilities and schools served by Holcomb Boulevard **(CLW 4514) & (CLW 4546)**

December 13 1972 - Revision 3C of Department of the Navy Bureau of Medicine and Surgery (BUMED 6240) instruction for standards for potable water. Within the new instruction there was yet another provision for the rejection of a water supply source. The BUMED reads "the presence of the following substances in excess of the concentrations listed shall constitute grounds for rejection of the supply:" Chlorinated Hydrocarbons were listed with a value of 3-100ppb. PCE, TCE and organic pesticides are chlorinated hydrocarbons.

The Carbon Cholorform Extract (CCE) for total organic content permissible in the drinking water was changed from 200 ppb to 150 ppb. There are no known records in existence indicating these required tests were ever conducted by the
(**CLW 144**.)

June 27 1974 – Base Order 5100.13B Safe Disposal of Contaminants or Hazardous Waste. The purpose of this order was to set forth responsibilities for the safe disposal of subject hazardous wastes such as **"organic solvents"**. The order also recognized that improper practices of disposal created hazards such as **contamination of drinking water**. **(CLW 5996).** According to the last Administrator of the dump, Don Tallman, the 5100.13B revision of the base order was to include the Air Station into the order. **(Cercla 226).** The copy of Base Order 5100.13B contained in the CLW documents was attached to a memorandum dated 12 March 1981 from Julian Wooten to the Base Maintenance Officer after contaminants were discovered at the Rifle Range Water Distribution System located next to the chemical dump.

March 31 1977 – Final Report: Oil Pollution Survey for Marine Corps Base Camp Lejeune prepared by SCS Engineers for NavFacEngCom. This report details an Oil Pollution Survey conducted at Camp Lejeune in 1976. The Navy has refused to release the uncensored version of the report for public viewing. The Navy asserts that Freedom of Information Act (FOIA) exemption 5 (protecting inter-agency or intra-agency memorandums or letters which would not be available by law to a party other than an agency in litigation with the agency) applies in this case despite the fact that the 1977 report of the survey was issued by an independent contractor and as such does not fall under the FOIA exemption. Furthermore, since MCBCL is a NPL site, this report falls under the CERCLA and RCRA disclosure laws and has not been made available to the public. **(1977 SCS Engineer Report)**

October 24 1977 – Southern Testing and Research Laboratories performs testing for four specific chlorinated hydrocarbons (Lindane, Endrin, Toxapehene and Methoxychlor) and 2 herbicides. The contract is for testing for these contaminants only. The detection limit is set at 1 part per billion (ppb) and 0.1 ppb respectively. The lab report was negative for these chemicals. The samples were received September 15th and analyzed on October 24 1977 after a month's delay. **The delay in testing casts serious questions to the validity of the results. (CLW 172).**

1977 – Pease Air Force Base New Hampshire. The base supply wells were analyzed after complaints about fuel odors in the drinking water. The water from the supply wells was found to contain trichloroethylene (TCE). The contaminated supply wells were then shut off and water was provided to the base by the city of Portsmouth. **(ATSDR PHA Pease AFB, New Hampshire).**

1978 — Memo titled Primacy of Safe Drinking Water Act (SDWA) and N.C. Potable water laws. The base prepares to co-ordinate operation and inspection of the water utilities in accordance to state law. Certification was required of the lab and plant operators. The state now required daily tests for bacteria and chemicals in the water. It was noted that when the new criteria went into effect, then the base would have need of an increase in lab and plant personnel. Julian Wooten was designated by the base as the single point of contact for all matters pertaining to the SDWA and the state. Utilities personnel would also be subjected to state laws and operating procedures. **(CLW 173).**

February 28 1978 – Letter from J.G. Leech of Naval Facilities Engineering Command (NavFacEngCom) to Charles Rundgren Water Supply Branch State of North Carolina concerning North Carolina's implementation of the Safe drinking Water Act. **The letter confirms that all monitoring data, operational logs,** requests for laboratory certification or special analysis concerning Marine Corps activities within North Carolina will be submitted to the state. NavFacEngCom requested that the state provide all relevant rules, regulation, newsletter, forms etc. be provided to them. **(CLW 176).** (The well operating logs have yet to be turned over to ATSDR. Verbally, the Department of the Navy advised they no longer have any copies of these logs. According to ATSDR

representatives, the files pertaining to Camp Lejeune's drinking water systems are missing from the State archives. The missing files pertained only to the time frame of the drinking water contamination.)

May 8 1978—Safe Drinking Water Act meeting. The meeting was attended by N.C. Department of Human Resources, base officials, Navy and Marine Corps officials. Charles Rundgren and Dr. Dyre of N.C. Dept. of Human Resources discuss testing state laboratories could provide to Camp Lejeune if specifically requested. However, Mr. Rundgren advised that because of their work load they were reluctant to take on anymore work. The state advised that they can provide tests for all organic, inorganic and radiological materials. **(CLW 3554)**. On October 1978, the Marine Corps requested the state to provide testing for the base. **(CLW 187)**.

September 7 1978—Memo titled Leachate from Solid waste and chemical landfills; monitoring of. "Because groundwater is used extensively as a potable water source at Camp Lejeune, current land disposal facilities should be monitored to indicate, as early as possible, any movement of contaminants from either disposal facility into the groundwater." **(CLW 3558)**.

October 10 1978-- Camp Lejeune reports elevated Coliform bacteria readings at the Courthouse Bay system. **(CLW 185).**

- **Oct 13 1978 --** NavFacEngCom letter 114:DPG ser 6280 13 Oct 1978, it was noted that there was a rapid increase in sewage and water discharges at the base. NavFacEngCom advised that if the current growth trends continued, MCBCL water and sewage treatment facilities capacity will be exceeded in the early 1980's. This was significant because increased growth meant increased usage upon the existing wells in the system. If not properly planned, as indicated in the 1959 Legrand Hydrological report **(CLW 1 and CLW 32)**, the water table would be in danger of salt water encroachment and more importantly, the increased draw from increased pumping has the effect of pulling surrounding water in towards the well heads. If the well head was situated near a contamination source such as wells HP 651 and TT 26, the contaminated water will be increasingly drawn into the well**. (CLW 274)**.

1979 – Fuel leak at Hadnot Point Fuel Farm. An estimated 20,000 to 30,000 gallons of fuel product leaked from the Hadnot Point Fuel Farm. The exact details of the leak and if any clean up was performed is unknown at this time. **(Cercla 417).**

1979 – Water testing at Willow Grove Naval Air Station in Pennsylvania revealed tetrachloroethylene (PCE) and TCE contamination in the base's drinking water supply. According to a 2002 Agency for Toxic Substances and Disease Registry (ATSDR) report, the well was no longer used for drinking water. Please refer to the following excerpt from the 2002 report: "Sampling of station supply wells began in 1979, when groundwater contamination was found in areas throughout the region. Data from 1979, when contamination was discovered, to 1984 reported maximum detected concentrations of 300 part per billion (ppb) of TCE and 91 ppb of PCE in on-site supply wells. The second highest detected levels in this time period were 68 ppb of TCE and 79 ppb of PCE.~ **After contamination was detected, this well was used mainly for fire protection, and not drinking water.**" **(2002 ATSDR PHA Willow Grove NAS).**

1979 – Warminster Naval Air Warfare Center Pennsylvania began sampling on-base water supply wells in 1979 when groundwater contamination in the area was first discovered. Based on the 1979 sampling results,the Navy closed Wells 1, 2, and 5 due to VOC contamination. **(ATSDR PHA for Warminster Naval Air Warfare Center).**

February 8 1979— NavFacEngCom letter to Commanding General MCBCL. Camp Lejeune was cited by EPA as a "major polluter" because of noncompliance with legal requirements listed under the National Pollutant Discharge Elimination System. This violation stems from sewage treatment and industrial wastewater/oil discharges to 71 different storm drains. The report states that several hundred corrective actions will be necessary to bring the base into compliance. **(CLW 276)**.

April 1979 -- Study of Tarawa Terrace (TT) and Montford Point Water Treatment Plants (WTPs) recommended demolishing plants due to age. The Holcomb Blvd plant was recommended to be expanded to serve Tarawa

Terrace and Montford Point. A new transmission line will be needed to connect Holcomb Blvd. to these areas. The study cites serious operating problems have been experienced at Tarawa Terrace WTP due to the inability to properly control the water treatment process. Problems included cementing of filter sands, structural damage to the filter bed supports and short filter runs **(CLW 191)**. The report recommended the addition of three new wells at TT and two wells at Montford point **(CLW 195)**. Tarawa Terrace WTP remained operational until 1 April 1988.

November 20 1979 – Environmental Engineering Survey MCBCL. The report was prepared for Utilities, Energy and Environmental Divisions, and NavFacEngCom. The purpose of the study was to identify current facility environmental deficiencies and provide an update on previously identified projects.

1. At the time of the report, the Quality Control Lab Chemist position was vacant. The responsibility of the chemist was to supervise the base Quality Control lab. **(CLW 253).**
2. The Quality Control lab was not certified by the EPA. One of the lab's responsibilities was to perform chemical, physical and bacteriological analyses of potable water systems. **(CLW 253).**
3. A required 3 year inorganic chemical analysis for potable water was not completed. **(CLW 253).**
4. The water and sewage treatment plants exhibited evidence of sporadic maintenance problems and personnel shortages. The report noted a severe shortage of personnel in the Natural Resources and Environmental Affairs Division. It was recommended this division be adequately staffed in order perform/meet the necessary demands for the environmental program. **(CLW 256).**
5. Severe personnel shortages in the Natural Resources and Environmental Affairs Division limit current capability to perform/meet the necessary environmental program. **(CLW 350)**.
6. The state of North Carolina required at least one person in charge of the 8 potable water treatment plants at Lejeune posses a Class A license. The current person holding the position possessed a class B license. There was also a recommendation for the laboratory technician to attend an EPA training course to achieve an effective pollution control and abatement program. **(CLW 258-259)**.
7. All known areas of existing and potential oils spills and oily wastewater discharge on Base were previously identified. However, spill prevention control and countermeasures (SPCC) to eliminate/control spills from 55 gallon oil drums for an estimated 1,561 space heaters was deleted due to cost limitations. **(CLW 259).**
8. MCAS New River, Solvents, fluids and oil discharges were found to be draining from the helicopter pad area into the storm drainage system. **(CLW 260)**.
9. Hazardous Waste/Toxic Substances. Identification, handling and disposal of hazardous and toxic materials have in the past, been an area of relatively minor concern. New laws and an increasing frequency of accidents have rendered past handling and disposal methods unacceptable. **(CLW 262)**.
10. A survey was conducted of all transformers containing Polychlorinated B-phenyls (PCBs). A request was submitted to NavFacEngCom to provide assistance in preventing PCB spillage into the water ways. 304 transformers were located at the Defense Property Disposal Office (lot 203) awaiting disposal. **(CLW 263).**
11. 5,094 4oz cans of DDT were found awaiting disposal in a tractor trailer at DPDO (lot 203). **(CLW 263)**.
12. Volatile Organic Compounds (VOCs) trichloroethylene, toluene, and xylene are categorized as hazardous materials on an attachment to the survey. **(CLW 346)**.
13. A recommendation was made for Mr. Sonny White of NavFacEngCom be requested to visit MCBCL to evaluate/provide acceptable storage and disposal options for the hazardous waste program. **(CLW 351)**.

- **Nov 26 1979 –** Environmental Protection Agency (EPA) publishes Suggested No Adverse Reaction Level (SNARL) for TCE. The one day and 10 day SNARL values are determined for emergencies and spills for a short period of time. EPA recommended a one-day SNARL of 2,000 parts per billion (ppb), a ten-day SNARL of 200 ppb and a long-term SNARL of 75 ppb. "It should be assumed that drinking water would be the primary or sole source of human intake of trichloroethylene." The same report also advises that SNARL calculations for short term and chronic exposures ignore possible carcinogenic risk that may result from those exposures as well as any possible synergistic effect of other chemicals in the water. The EPA report also warned of long term carcinogenic effects in both male and female animals. Trichloroethylene was reported to be mutagenic in microorganisms It transformed cultured mammalian cells to carcinogenic cells that bound with tissue macromolecules. These observations comprised the basis for reasoning to support the carcinogenic potential of trichloroethylene. **(CLW 353).**
- **Nov 29 1979 --** EPA publishes final regulations for the control of total trihalomethanes ("TTHMs") as an amendment to the National Primary Drinking Water Standards. This regulation establishes a Maximum

Contaminant Level (MCL) of 0.10 mg/L (parts per million) for TTHMs. A timeline was established for compliance and monitoring with this MCL. Water treatment systems serving between 10,000 and 75,000 people, such as Hadnot Point and Marine Corps Air Station (MCAS), New River WTPs, required mandatory monitoring to begin by 29 November 1982 and compliance with the new standard was to be achieved by 29 November 1983. Water treatment systems serving less than 10,000 people, such as TT, Montford Point, Rifle Range, Courthouse Bay, Onslow Beach, and Holcomb Blvd, the regulation left primacy with each respective state. **(CLW 6452).**

February 10 1980 – The EPA publishes SNARL in Federal Register for PCE. The EPA recommended a one-day SNARL of 2,300 ppb, a ten-day SNARL of 175 ppb, and a long-term SNARL of 20 ppb. This same report also advised that "SNARL calculations for short term and chronic exposures ignore possible carcinogenic risk that may result from those exposures as well as any possible synergistic effect of other chemicals in the water". Adverse effects to mice fetuses were also noted in the report. The adverse effects include lowered birth weight , increased fetus resorptions, split sternebrae, subcutaneous edema and delayed ossification of skull bones. A matter of interest was cited as part of the report. The matter was a 1978 article in Medical World News which discussed a mother who worked in a drycleaner during the time she was nursing her infant. The child developed jaundice and an enlarged livered. Both conditions ceased when the mother discontinued nursing. **(CLW 385).**

March 14 1980—State of North Carolina assumed primary enforcement responsibilities for the enforcement of Safe Drinking Water Act for all public water systems. **(CLW 425).**

April 9 1980 – Suggested Action Guidance Tetracholorethylene (PCE), published by the EPA. "Our recommendations for this situation (contamination of the drinking water with PCE) include: (1) immediate remedial action (within 24 hours) if the drinking water concentration of tetracholorethylene is found to exceed 2.3mg/l (2,300 ppb), equivalent to our 1-day SNARL, and (2) remedial action within 10 days if the tetracholorethylene concentration exceeds 0.13 mg/l (130ppb), equivalent to our 10 day SNARL. For extended exposures, we recommend, in addition, that the drinking water supplies should be maintained at no more than 0.04 mg/l (40 PPB) for any extended period." "The suggested action guidance should not imply that EPA condones the presence of any level of this contaminant in drinking water". **(CLW 391).**

June 27 1980 – Condition Survey for POL Facilities (Hadnot Point Fuel Farm) Camp Lejeune. The survey was conducted by Cal J Ingram of NavFacEngCom to determine the condition of the POL facilities for MCAS New River and Camp Lejeune. The survey was necessary due to leakage, problems, obsolescence and environmental/safety concerns. **(Cercla 96).** See PDF page 11.

The following recommendations were made for the Hadnot Point fuel farm.

1. The fuel facilities were approximately 35 years old. Mr. Ingram noted that because of age, there has been general corrosion and deterioration of the tanks and pipelines.
2. Maintenance over the years has been minimal due to insufficient funding. Funding to keep abreast of the latest state of the art was not available.
3. Camp Lejeune was deficient in new fueling designs including automatic high liquid alarms, tank coatings, dead man controls, impervious dikes and containment curbs.
4. The fuel storage tanks have never been cleaned since they were built.
5. There were many buried valves and flanges that can not be inspected or maintained.
6. An automatic liquid level indicator was installed but never made functional.
7. Above ground tank S-1009 (the 600,000 gallon tank) exterior coating was beginning to peel and evidence of rust. The protective dike was insufficient and not impervious. No locks were noted on the drain valve for the tank.
8. Tank S- 1031 was discovered to have a leaking valve and pitting in the interior bottom of the tank.
9. As a result of the leaking valve in tank S-1031, it was determined that another tank valve also leaked badly.A recommendation was made to test tank S-1009 as soon as possible to prevent leakage, loss of product and environmental contamination.
10. A recommendation was made to replace and install new piping, new tank valves and new concrete valve pits for all storage tanks. It was essential that all valves be accessible for proper maintenance.

11. A recommendation was made to empty and clean the interiors of all underground storage tanks and then inspect them for leaks.

Note, none of these recommendations were acted upon until 1989. Please see entry for 29 March 1988.

July 29 1980— NavFacEngCom letter dated 29 July 1980 initiated the TTHM surveillance program at Camp Lejeune to begin in October 1980 and terminate December 1981. The purpose was to establish a data base to characterize potable water supplies on base. Jennings Laboratories and the U.S. Army Environmental Hygiene Agency (USAEHA) lab were selected to analyze the base's water for TTHMs. **(CLW 448).**

October 1 1980 – LANTDIV arrives at MCBCL and collected a composite sample, composed of water from all eight WTPs. This analysis was for priority pollutants. If a potential problem was identified, then further testing on the eight individual systems would be warranted in order to determine the source of the problem. **(CLW 613).** LANTDIV did not share these results (Jennings Lab) with MCBCL until June 1982. **(CLW 613).** There were no indications that the sample was preserved with ice in order to protect the sample for analysis. Furthermore, Supervisory Base Chemist, Elizabeth Betz questioned how the sample was compiled and whether the volume of the sample was weighted in relation to the eight different systems aboard the base. **(CLW 590, CLW 613 & CLW 3667).**

(Note: VOCs are volatile. If they were not preserved with ice, or if there is a significant delay in sampling, then the test results indicating the presence of VOCs would be lowered and unreliable. Furthermore, samples can be easily altered by shaking the samples and then opening the caps or by leaving caps loose or off all together. VOCs are quick to volatize and convert to a gaseous state thus quickly disappearing from a sample with no trace that they had been there in the first place.)

- **Oct 30 1980 --**The results from Jennings Laboratories indicated that the Volatile Organic Compounds were detected in the composite sample collected 1 Oct. 1980. Trichloroethylene, dichlororethylene and vinyl chloride are among the 11 contaminants detected in the water. No further testing is performed despite the presence of these compounds in the water. **(CLW 430).**

- **Oct 30 1980 --**The U.S. Army lab (USAEHA) from Fort McPherson conducted water testing for TTHMs on samples taken from the Hadnot Point water distribution system. USAEHA Army Laboratory Service Chief, William Neal, warned Navy officials with a hand written caption on the bottom of the lab results: "**Water is highly contaminated with low molecular weight halogenated hydrocarbons.** Strong interference in the region of ChCl2BR. Cannot determine the value of that compound." No action was taken in regard to this warning. **(CLW 436).**

November 18 1980— While grading the parking lot of the former Naval Field Research Lab (Bldg Pt-37), workers discovered Strontium 90 Beta Buttons and at least 7 cases of Radium 226 reflectors buried in the area. The building was formerly used by the lab to conduct radioactive experimentation on dogs from 1947 through 1976. The radioactive materials along with several radioactive animal corpses were removed from the site by Naval personnel from Port Huenneme California. A total of 499 radioactive Beta buttons were discovered at the site along with a former incinerator ash dump site. **(Cercla 648).**

December 18 1980— USAEHA Army Laboratory Services Chief, William Neal, again warned Camp Lejeune Marine Corps Base that there was a problem with the Hadnot Point TTHM samples. He handwrote on the report: "**Heavy Organic interference** at CHCL2BR. **You need to analyze for chlorinated organics** by GC/MS." **(CLW 438).** These samples were taken from the Hadnot water treatment plant pump, the Naval Hospital Emergency room sink, buildings 1202, 65 and FC-530. No action was taken in regard to this warning. **(CLW 5800).**

February 9 1981—USAEHA Army Laboratory Services Chief, William Neal, again warned Camp Lejeune Marine Corps that there was a problem with the Hadnot Point TTHM samples. He handwrites on the report: "**You need to analyze for chlorinated organics by GC/MS**." The ChCl2BR column was filled in with question marks and "heavy interference" was written over the column. No action was taken in regard to this warning. **(CLW 441).**

March 6 1981 – Military Construction Data for project number LE201M, repair of POL (Hadnot Point Fuel Farm) facilities for Camp Lejeune. $537,200 allocated to clean and repair the petroleum/oil/lubricant tanks, perform vaccum tests, sandblasting and required repairs. The project also included the installation of high level alarms, reworked dikes and for the piping and valves to be replaced. The projected cited deterioration leakage problems and potential violation of environmental and safety concerns will continue if work is not completed. **(Cercla 96).** See PDF page 17.

- **March 9 1981 --** USAEHA Army Laboratory Services Chief, William Neal, again warned Camp Lejeune Marine Corps that there was a problem with the Hadnot Point TTHM samples. He writes on the report: "**Water is highly contaminated with other chlorinated hydrocarbons (solvents)!**" **(CLW 443).** No apparent action was taken by Marine Corps Base Camp Lejeune on this or any of these warnings for Hadnot Point. The TTHM reports continue to show indications of interference in the areas previously identified but the warnings from Lab Services Chief Neal cease at this point.
- **March 12 1981 --** Base Maintenance Officer receives copy of Base Order 5100.13B concerning the Safe Disposal of Contaminants of Hazardous Wastes from the Director of the NREA division, Julian Wooten. **(CLW 5996).**
- **March 31 1981 –** Base Supervisory chemist Elizabeth was instructed by LANTDIV to obtain water samples from the Rifle Range Chemical dump in order to determine Hazardous waste characteristics. Soil samples from around the dump were also taken for the same reason. **(CLW 3667).** The results were returned on 7 April 1981. A variety of contaminants were found in the test wells and pools of water including: Toluene at 242 ppb, Carbon Tetrachloride 3560 ppb, dichloroethylene 122 ppb, chloroform 15,520 ppb and methylene chloride at 20,460 ppb in the various tested areas. **(CLW 3675).** The results of this test were thought to be in error. Mr. Wallmeyer cited possible errors in sampling technique or a problem with the containers as the probable cause. **(Cercla 376).** NavFacEngCom scheduled Jerry Wallmeyer to visit the base and assist Ms. Betz in the collection of a second sample. **(CLW 3685).**

April 10 1981 – Jerry Wallmeyer arrives from LANTDIV and assists Base Supervisory Chemist Betz in collecting additional water samples from the chemical dump. Samples were also taken from the finished water at the Rifle Range Water treatment plant and supporting wells. This plant was in close proximity to the chemical dump. **(CLW 3685).** The samples were delivered by Jerry Wallmeyer to Jennings lab on 13 April. The results were released on 20 April and showed much lower readings on the contaminants than what was seen on 30 March. However, Methylene chloride, trichloroethylene and chloroform were present in the raw water wells for the Rifle Range water treatment plant. The water treatment plant tested 17ppb Chloroform and 3 ppb Methyene Chloride. **(CLW 3678 + CLW 3679).** Betz advises in a memo to Danny Sharpe that she felt the lower samples from the 10 April readings could be because of a difference in the sampling procedures, bottles used, faulty pumps and possibly the weather. Betz noted that on the day of the test in March, there was rain. Rainfall in this area would cause movement of contaminants in the ground as the water percolates to the aquifer. Furthermore, Betz advised that the well pumps used in the 10 April samples were faulty and they experienced problems in suction and obtaining water flow. All of these factors could explain the lower readings of 10 April 1980. **(CLW 3714).**

May 8 1981—LantNavFacEngCom letter 114:JGW 6280 of 8 May 1981 to Commanding General Camp Lejeune Marine Corps base attention to Assistant Chief of Staff, facilities. Mr. Wallmeyer advised Camp Lejeune that the second round of sampling showed a greatly reduced amount of organic contaminants. He advised a third round of sampling will take place in May and at that point a report will be made with interpretations and findings. **(Cercla 376)**. On 20 May, Paul Rakowski from NavFacEngCom arrived at the base for the third round of sampling. Elizabeth Betz noted in a 26 May Memorandum for the record, the weather was dry and that one of the sample sites was low in water and another was dried up entirely. There were no problems with the wells on this sample. Mr. Rakowski collected a composite sample at the water treatment plant. The composite sample was taken from standing water in the tank. There were no notes on how long the water had been standing in the tank. Ms. Betz recorded on two different occasions that the samples were not preserved in ice at the recommendation of Mr. Rakowski. **(CLW 3735).** The results for the 20 May testing once again show lowered amounts of the contaminants. The raw and treated water at the Rifle Range water treatment plant was contaminated with chloroform, methyl chloride, and dichlororethane at reduced levels. **(CLW 3755).**

Jun 8 1981 – MCBCL advises the EPA that DDT was discharged at DRMO lot 203, possibly in significant amounts. The base also advised that lot 203 would be subjected to an intense study by Naval Energy and Environmental and Support Activity (NEESA) in FY 1982. **(CLW 6004).**

- **Jun 23 1981 --** The Hadnot Point TTHM tests show signs of elevated CHCL3 and CHCL2BR as in earlier reports but there was no written warnings from Lab Services Chief Neal. **(CLW 446).**

July 21, 1981 – Jerry Wallmeyer from LANTDIV calls Elizabeth Betz to inquire on who ran and what procedures were used in the TTHM analysis for Hadnot Point and MCAS New River. He also confirmed that the Rifle Range system will be collected as well. Mr. Wallmeyer specifically requested that at the Rifle Range: one sample be taken where the raw water enters the plant while the wells are pumping, one sample from the treated tap water at the plant, two from mid points in the distribution line, and then the final sample from the furthest point away from the plant. **(CLW 5791).**

- **July 31 1981 –** Letter from J.R. Bailey NavFacEngCom to MCBCL concerning suspected chemical dump in the rifle ranger area. The letter provides an analysis of the ground water, surface water and potable waters. **(CLW 3757).**
    1. Mr. Bailey recommended no further action to be taken concerning the TTHM or organic problem at the Rifle Range water system at that time. Mr. Bailey then stated that MCBCL was scheduled for an Initial Assessment Study for the NACIP program to begin in FY-82. Mr. Bailey advised that the information in his letter and the TTHM monitoring program will be utilized by the Initial Assessment Study (IAS) team
    2. The results of the analysis should be passed to local and state officials.
    3. The letter and the accompanying enclosures did not contain any of the March readings taken by Elizabeth Betz. These results were dismissed as invalid due to a suspected contamination of the containers and improper sampling techniques.
    4. Rifle Range well RR-97, which tested positive for organic contamination, should not be used. Preference should be given to using wells RR-45 and RR-47 because of lower levels of organic contamination found in their samples.
    5. Suggested No Action Response Levels (SNARLS) recommendations from the EPA concerning PCE and TCE are given to the base. They include recommendations for one day, ten day and long term SNARLS. The long terms SNARL for PCE was 20 ppb and TCE was 75ppb.
    6. USAEHA TTHM sampling/analysis was expanded to include the Rifle Range water distribution system. (The TTHM lab reports for the Rifle Range are missing).

It is important to note that the measures recommended and executed in this letter applied only to the wells located at the Rifle Range Water Distribution System which was located next to a chemical dump known to exist and registered with the EPA. Concurrent with the March-July testing at the Rifle Range WDS, the Hadnot Point Water Distribution System received multiple written warnings stating the system's water was highly contaminated with Chlorinated Hydrocarbons (Solvents). The laboratory advised that these chemicals were interfering with the tests but no action was taken to locate by base officials to determine the source of the contamination or test any of the specific wells on that system. A year after the Spring 1981 testing at the Rifle Range, a new Laboratory (Grainger) began testing the potable water aboard the base. This testing also included the Tarawa Terrace Water Distribution System. Grainger not only notice the same interference as indicated in the prior testing the year before, they took things a step further by quantifying and identifying the specific chemicals causing the interference (PCE and TCE). Despite the additional warnings and specific identification of the chemicals, no action was taken to identify and locate the source of the contamination. To date, the Navy has failed to provide any explanation as to why action was taken at the Rifle Range Distribution System in 1981 and no action was taken when the same chemicals were discovered at the Hadnot Point WDS in 1981 and then again in 1982. Why the different standard?

August 27 1981 – Commanding General MCBCL, Major General Cooper advised Charles Rundgren at N.C. State Division of Health Services that based on laboratory analyses, the Rifle Range water system met current drinking water standards. There was no mention of the organic chemical contamination found in the Rifle Range water distribution system. The data from the 30 March testing indicating high levels of contaminants was left out of the

letter to the state. General Cooper advised the base will continue to monitor the water system on a monthly basis. The letter also advised the state that the base was scheduled to undergo and Initial Assessment Study (IAS) in FY 1982 to identify assess and control contamination at the base. **(CLW 6124).**

September 1981—The USAEHA Army Lab at Fort McPherson experienced equipment problems which result in a large back log of samples. Their analysis for TTHMs in the Hadnot Point and New River Systems ceased after September 1981. However, the Rifle Range TTHM testing continued at the request of the base. **(CLW 468).**

- **Sep 10 1981 –** Memorandum to the Commanding General from the Base Maintenance Officer. TTHMs at the Rifle Range and Hadnot Point water distribution systems tested below the MCL for TTHMs but MCAS New River exceeded the TTHM standards in three of the six months tested. Col. Mount advises NavFacEngCom recommended no further testing for other chemicals at the Rifle Range until the NACIP study was completed. **(Cercla 301).**

December 4 1981– August TTHM analysis for Hadnot Point Complete. USAEHA Laboratory Services Chief wrote "**interference on this peak**" in the CHCL2BR column but there was no written warning as on prior analytical test results. **(CLW 5740).**

- **Dec 8 1981 –** Letter from Commanding General to Commandant of the Marine Corps concerning pollution abatement related to past Hazardous Material disposal aboard MCBCL. The letter advised that the Commanding General of MCBCL was concerned the NACIP study would not address the Rifle Range situation in a timely manner and this may result in an adverse public reaction and or controversy. The General requested guidance from HQMC in this matter. The base proposed a course of action to accelerate assessment and corrective action for the chemical landfill site. **(CLW 5816).**
- **Dec 18 1981 –** Letter from NEESA to NavFacEngCom concerning NACIP at Camp Lejeune. The letter outlines the detailed of the NACIP program. The first phase of the study was called the Initial Assessment study (IAS). The purpose of the IAS was to identify potential hazardous waste sites and evaluate them for a possible confirmation study. According to enclosure the confirmation study would proceed only if (page A-11) (**Cercla 2042**).

    1. Sufficient evidence exists to suspect that contaminated disposal sites exist, and that
    2. The Contamination presents **a definite danger** to (a) the health of civilians in nearby communities or installation personnel or (b) the environment within or outside the installation. (note, please see how this initial wording changed in the final report listed in April 1983).

- **Dec 30 1981** – In response to the Defense Environmental Quality Program Policy Memorandum (DEQPPM) 80-6, the Department of the Navy developed the Naval Assessment and Control of Institutional Pollutants (NACIP) Program. The purpose of this program was to identify, investigate, assess, characterize, the release of hazardous substances, and to reduce the risk to human health and the environment from past waste disposal operations and hazardous material spills at Navy/Marine Corps activities. Previously, base environmental issues were handled by Utilities, Energy and Environmental Division, LANTDIV NavFacEngCom in Norfolk Virginia. The NACIP program management plan was given to the base. This plan states the Initial Assessment Study (IAS) will collect and evaluate all evidence which indicates the existence of pollutants which may have contaminated a site or pose an imminent health hazard for people located on or off the installation. **(Cercla 2042)**.

January 14 1982 – NACIP (Naval Assessment and Control of Installation Pollutants) Initial Assessment Study ("IAS") begins at Camp Lejeune. The intent of this study was to identify, asses, and control contamination of the environment from past operations. Water Air and Research of Gainesville, Florida was selected to perform the Initial Assessment Study. The base was instructed to provide the use of a photocopying facility to duplicate records. The NACIP team was granted permission to review base records in order to provide information on past operations, environmental contamination, and industrial processes. **(CLW 455).**

February 5 1982 – Letter from LANTDIV to NAVFACENGCOM dated 05 Feb 1982, MCAS New River was above TTHM limits based on the 1980-81 characterization study. The Rifle Range and Hadnot Point systems were within standards. **(CLW 458).** Camp Lejeune was notified that the NACIP IAS team was scheduled to visit Camp Lejeune in March 1982. **(CLW 470 & CLW 477).**

March 17&18 1982— Base Chemist, Ms. Betz, Jerry Wallmeyer, LANTDIV, and NACIP members visited the suspected chemical dump to collect samples from rifle range test wells. Jerry Wallmeyer requested to be provided with rainfall totals for the area. Samples were also taken from potable wells servicing the Rifle Range water system. **(CLW 488).** Test results from Jennings Lab indicated Rifle Range Dump test wells and potable RR well #97 were still contaminated with VOCs. PCB was also reported in the test well samples. Samples were hand delivered by Mr. Wallmeyer from NavFacEngCom. The analysis was performed two days after collection and no indications were given that the samples were preserved in ice to ensure accuracy. **(CLW 487 + Cercla 373).**

- **March 1982 –** Wallace Eakes of NEESA contacts prior administrators of the Chemical Dump and determines that chemicals such as PCBS, TCE, DDT and others buried at the site. During the course of his investigation, Mr. Eakes noted that there were reports of a chemical mist on foggy mornings. One notation was concerning an incident where a heavy equipment operator reported choking after he disturbed the ground while digging a firebreak. The operator reported a white mist and abandoned his equipment after he began to choke. **(Cercla 226)**.
- **March 4 1982–** The EPA issues an Advanced Notice of Proposed Rulemaking concerning Volatile Organic Compounds in the water. The purpose of the ANPRM was to initiate discussion on the issue of VOCs in drinking water and to develop alternatives to deal with the problem. **(CLW 3804).**
- **March 14-21 1982 –** Report from Wallace Eakes of LantDiv concerning the IAS at Camp Lejeune. Mr. Eakes noted that the IAS discovered about 70+ disposal sites but stated most sites were minor and not significant. The Commanding General expressed a concern about the Rifle Range because of the chemical dump. Jerry Wallmeyer of LantDiv held a briefing for the Assistant Chief of Staff, Facilities Col. Millice. In this briefing, Mr. Wallmeyer outlined the IAS findings at the Rifle Range Chemical Dump. **(Cercla 274).**
    1. The Rifle Range Dump Operated between 1955-1977.
    2. Trichloroethylene, PCP, PCBs, Chlordane, DDT were some of the items discovered at the site. .
    3. The IAS scientist believed at the time that the underground water flow for the site was toward the New River and should not enter the potable water wells at the Rifle Range. (Note, the range's wells were tested in 1981 and found to be contaminated with VOCs and other chemicals. It is unclear if these findings were revealed to the IAS team.)
- **March 23 1982 –** IAS Exit Briefing held aboard Camp Lejeune. The exit briefing noted good co-operation with Camp Lejeune personnel. Seventy sites were discovered. Of these sites, the Chemical landfill at the Rifle Range, The fuel farm on Hadnot Point, the Fuel Farm at MCAS, The Camp Geiger Dump, The New River Mercury Dump and building 712 (the base daycare center) were noted as significant. The report noted that the findings concerning building 712 were a shock to all involved in the study. Mr. Eakes recommended the following course of action for the daycare. "Since this may pose a health threat to the children at the daycare, preventive medicine should be involved." Mr. Eakes noted that he and Colonel Mount then visited the Navy medical officer, Commander Lachapelle and briefed him on the situation. According to Mr. Eakes, "Commander Lachapelle agreed to take air and soil samples in the area **under the guise of a normal health survey.**" **(Cercla 274).** The samples were taken in June of 1982 by the Navy Environmental Health Center. Their tests revealed no detectable contamination in the building. **(Cercla 268).**
- **March 25 1982 –** Base Chemist Betz and Gaines Huneycutt visited Lot 203 and take a composite soil sample after DDT laden barrels were reported to have been found at the lot. **(CLW 3867).** This lot was located adjacent to HP water supply well #651.

April 2 1982– Dave Goodwin of LANTDIV called Elizabeth Betz and requested additional samples to be taken at the Rifle Range WTP and the supply wells for the range. **(CLW 3845).**

- **April 8 1982 –** The EPA in accordance with the CERCLA Act (Superfund) of 1980, requested MCBCL to complete a set of forms to supply the EPA with information on hazardous waste sites at MCBCL. **(Cercla**

2053**).** The request was forwarded to HQMC for review and it was decided that the base can not provide the requested information until the NACIP site evaluation is available in September 1982. **(Cercla 2054).**

- **April 16 1982–** Dave Goodwin of LANTDIV called Elizabeth Betz and requested another re-sampling of the Rifle Range WTP and the supply wells for the range. **(CLW 3865).**
- **April 15 1982–** the State of North Carolina granted permits for the construction of two new supply wells to be installed for use in the Rifle Range water treatment system. **(CLW 517).**
- **April 19 1982–** The base began obtaining water samples from all eight water distribution systems for TTHM analysis to be performed by Grainger Lab. **(CLW 537).**

May 5 1982. – MCBCL letter to Commandant Marine Corps dated 5 May 1982. Col. Millice advised HQMC that the base can not comply with the 23 April 1982 EPA request for potential hazardous waste inspection reports until the NACIP IAS was completed. **(CLW 3853).**

- **May 6, 1982–** Mike Hargett of Grainger Labs called Elizabeth Betz to inform her that they had found the synthetic organic cleaning solvents tetrachloroethylene and trichloroethylene in samples sent from the Tarawa Terrace and Hadnot Point water distribution systems. **(CLW 542).** Mrs. Betz then informed Danny Sharpe, Supervisory Ecologist, of Grainger's findings and then passed the findings up the chain of command, I.E. Deputy Base Maintenance Officer. **(CLW 5179).**
- **May 14, 1982. –** Elizabeth Betz was summoned to Lt. Col Fritzgerald's office in order to brief Col Millice and Lt Col. Fritzgerald on the April TTHM analysis from Grainger labs. In her memorandum for the record, Betz Advises, "it appeared to me that they had not been informed about the findings (PCE and TCE in the finished water for TT and HP water distribution systems). **I didn't inform them**." **(CLW 553 + CLW 5179).**
- **May 17-24, 1982. –** Additional TTHM samples are taken for Camp Lejeune (including the TT and HP water distribution systems). Ms. Betz requested that all results be held until they have all of the results. Ms. Betz also informed Grainger Labs that some of the samples had problems with the caps and air bubbles but they were marked such. **(CLW 550 + CLW 554).**
- **May 26 1982. –** The Commanding Officer for the Occupational and Preventive Medicine Service, Naval Regional Medical Center, aboard Camp Lejeune was advised in writing that pesticides were found in the soil around the former pest control shop in high quantities. In 1966, this shop was converted into an on base daycare center. The soil samples were taken from in and around the center including the fenced play area. **(Cercla 2055).**
- **May 26 - 28 1982. –** Mike Hargett from Grainger Labs called to inform Ms. Betz that the cap liners used in some of the May samples were "messed up". The lab agreed to take additional samples and new containers were sent. These samples were recollected on 27 and 28 May 1982 and mailed to Grainger Labs. **(CLW 561).** One of these samples was from a sink at the Naval Hospital on Hospital Point. Bruce Babson of Grainger lab was able to quantify this reading at 1,400 ppb TCE.

June 4-9 1982 – Mike Hargett confirmed his 27 May phone conversation in writing with Elizabeth Betz. He also informed Ms. Betz that the solvent peaks which were reported in his previous report were still present but the comparison with duplicate samples (the ones with the cap issues from May 17-24) indicated poor repeatability. **(CLW 564).** The May 26-28 sample analysis was completed on June 9th. **(CLW 566).**

- **June 14 1982. –** Jacksonville Daily News reported toxic pesticides found in soil at Camp Lejeune's sitter service facility (building 712). **(CLW 572).**
- **June 22 1982 –** Draft Initial Assessment Study for Camp Lejeune. **(Cercla 332).**

1. PDF Page 23 of 171. Potable wells at the base are usually deep, but due to voids in the confining layer, this carries some risk. Also, heavy demands for water at times produce an overall decline of pressure in the semi-confined aquifer. Therefore, contaminants can migrate: (1) laterally to surface water and (2) vertically through gaps in the confining layer.
2. PDF Page 43 of 171. Conclusions point number 5 states that the water table is highly susceptible to contamination from hazardous waste disposal practices. This conclusion does not appear in the 1983 Final IAS Report.

3. PDF Page 46 of 171.The detection of pollutants in groundwater samples is generally conclusive evidence , negative results for a limited number of samples does not prove that pollutants are not and/or will not be present.
4. PDF Page 103 of 171. Solvent Usage. This section described solvent usage aboard the base. The report indicated that large amounts of solvents were used throughout the history of the base. These operations were used at operations scattered throughout the base and control of waste was difficult. This section of the draft IAS was omitted in the Final IAS report.
5. PDF Page 52 of 171. The IAS draft recommended that HP well 602 be sampled because it was located 1,100 feet from and down gradient of the Hadnot Point Fuel Farm. The well was also identified as an active pumping well.

The draft IAS report reads that Recommendations for the next phase of the NACIP program, a Confirmation Study, is based on the findings of an IAS. A Confirmation Study is conducted only if an IAS Concludes that:

1. Sufficient evidence exists to suspect that an installation is contaminated; and
2. The contamination presents a definite damage to (a) the health of civilians in adjoining communities or personnel within the base fence line or (b) the environment within or outside the installation.

If these criteria are not met, no further studies will be conducted under the NACIP program. As explained in this report, a Confirmation Study at MCB Camp Lejeune is warranted. The criteria and conclusion used to justify a Confirmation Study was significantly altered in the Final version of the report.

- **June 24 & 25 1982. –** TTHM water samples for all water systems aboard MCBCL were collected for Grainger Labs. **(CLW 570).**

July 1 1982 – Memo from J. R. Bailey NavFacEngCom to Camp Lejeune concerning composite soil sample advises Camp Lejeune to investigate sources of lead (MOGAS, AVGAS, engine oil, water battery acid, etc.) in order to reduce/eliminate contamination. It was noted the Cadmium level was approaching the hazardous waste limit and should be reduced/eliminated. Battery waste and electroplating operations were noted sources of cadmium. **(Cercla 2088).**

- **July 13 1982 --** Grainger Labs completes the analysis for the samples taken 25 June. The samples were received on 28 June.
- **July 27 1982 –** Memo from base Supervisory Chemist Elizabeth Betz to Supervisory Ecologist Danny Sharpe. Ms. Betz recommended TTHM monthly collections be reduced. However, she felt MCAS New River should continue their monthly samples due to high readings. Ms. Betz also advised Tarawa Terrace, Hadnot Point and Onslow Beach continue to be tested monthly. She also pointed out the prior commitment by the previous Commanding General to continue monthly sampling at the Rifle Range. **(CLW 583).**
- **July 27 1982 –** Memo from Julian Wooten to Base Maintenance officer regarding TTHM analysis. No problems were noted for Hadnot Point. However, Mr. Wooten advised MCAS New River was at the limit set for TTHMS and any increase would result in a violation. Mr. Wooten pointed out the remaining six water systems aboard the base do not yet require official monitoring and recommended the monthly analysis be discontinued in favor of a quarterly program. Mr. Wooten recommended the Utilities Branch evaluate alternatives for reducing TTHM content through modification of chlorination methods and procedures. **(CLW 582).**
- **July 28 1982 –** Four water samples (2 from TT and 2 from Hadnot Point) taken and shipped under ice to Grainger Labs. **(CLW 584).** These samples were in addition to the TTHM samples taken for all base systems in 29 July. The purpose of the samples was to follow up on the April readings which were discussed in a phone conversation on 6 May between Elizabeth Betz and Mike Hargett of Grainger Labs. **(CLW 589).** The topic of the 6 May conversation was interference in the TTHM readings for Hadnot Point

and Tarawa Terrace caused by the presence of trichloroethylene and tetrachloroethylene, aka Perclene, (synthetic organic cleaning solvents) in the samples. **(CLW 590).**

- **July 29 1982 –** Phone call between Elizabeth Betz and Linda Sewall of the Water Supply Branch State of North Carolina Department of Human Resources. They discussed TTHM reporting requirements and violation procedures. Reporting was not required until November 1982. Systems under 10,000 people were not required to report unless over TTHM limit. Ms. Betz inquired about secondary contaminants and was told the state added lead, manganese and PH. No mention was made to Ms. Sewall concerning the PCE and TCE readings in the water nor did Ms. Betz inquire into whether or not these chemicals were a concern to the state of North Carolina. **(CLW 588).**

August 5 1982 – Letter from NEESA, Port Hueneme to Camp Lejeune regarding the draft Initial Assessment Study for Camp Lejeune. The Commanding General is provided their copy of the draft IAS for review and comments. NEESA requested that Camp Lejeune review the report for completeness, accuracy and concurrence with the recommendations contained within the report. These comments were due by 25 August. **(CLW 6332).**

- **Aug 10 1982 –** Grainger Lab sent the Commanding General of Camp Lejeune analytical results from July's sampling. Mr. Babson advised "Interference which were thought to be chlorinated hydrocarbons hindered the quantization of certain Trihalomethanes. **These appeared to be at high levels and hence more important from a health standpoint than the total Trihalomethane content. For these reasons we called the situation to the attention of Camp Lejeune personnel." (CLW 592)**

1. Tetrachloroethylene was identified as the contaminant in the Tarawa Terrace well fields. The concentrations were relatively stable during the period of examination and ranged between 76-100 ppb. (Note SNARL for extended exposures was set at 40 ppb). No action was taken.
2. The May 27 Tarawa Terrace sample was reanalyzed and found to contain 80 ppb of tetrachlororethylene.
3. Tetrachloroethylene and Trichloroethylene were identified as the contaminants in the Hadnot Point well fields. The levels in the July samples were much lower than the ones taken in May and ranged between 19 & 21 ppb. No action was taken. Note the presence of tricholorethylene in the well fields is not explained by the asbestos coated pipe theory forwarded by Elizabeth Betz. (see 19 April 1982 entry).
4. The 27 May sample for Hadnot Point was reanalyzed and found to contain 1,400 ppb of trichloroethylene. The sample was taken from the base Naval Hospital.
5. The Grainger report was forwarded to Elizabeth Betz for interpretation.

Note, Mr. Babson's conclusion that the contamination was emanating from the respective well fields for both Tarawa Terrace and Hadnot Point meant that the wells providing raw water to these two systems were contaminated.

- **Aug 18 1982 –** Memorandum for the record from Elizabeth Betz. Ms. Betz advised that Federal regulations only called for quarterly samplings. No TTHM problems were identified for the Tarawa Terrace, Hadnot Point, Montford Point, Holcomb Blvd, Courthouse Bay or Onslow Beach systems. Therefore the decision was made to reduce these systems to quarterly sampling per authorization of the Base Maintenance Officer. MCAS New River will continue testing while base utilities make changes. The Rifle Range will also continue monitoring to protect against intrusion from the Chemical Landfill. **(CLW 605).**
- **Aug 19 1982 –** Memorandum for the record concerning Grainger labs letter of 10 Aug 1982. Elizabeth Betz confirmed the May 6th warning from Grainger lab. Tetrachloroethylene and Trichloroethylene were specifically identified and discussed. Betz noted TCE was used as a metal degreaser and is also used as a pesticide and fumigant. Betz suggested the PCE readings at Tarawa Terrace maybe due to coated Asbestos coated pipes in the water system**. However, a 1983 base generated chart showing the materials used in the construction of pipes in the base's water distribution showed that no vinyl lined asbestos coated pipes were used in any of the water distribution systems aboard the base.** (CLW 6328).

  No action was recommended even though the PCE levels were above the recommended extended exposure level of 40 ppb. The 1,400 ppb reading at Hadnot Point was dismissed for no apparent reason and the

conclusion was made that Hadnot Point was within the TCE SNARL. A hand written note at the bottom of the page reads,"special testing of TT & HP plants for trichloroethylene & tetrachloroethylene. Both within limits, recommend sending data to LantDiv." No further action was taken. **(CLW 606).**

- **Aug 23 1982 –** Memo from Elizabeth Betz to Danny Sharpe concerning missing test results. Betz advised she has no test results from Jennings Lab concerning the March and April 1982 water and soil samples taken from the Rifle Range, chemical landfill and Lot 203. **(CLW 3851).** These reports were provided to the base in a letter dated August 19, 1982 **(Cercla 373).**
- **Aug 25 1982 –** Letter from Commanding General MCBCL to Officer in charge Naval Energy and Environmental Support Activity regarding draft of Initial Assessment Study for NACIP. In the letter, Col. J.T. Marshall recommends the "Discussion of Trihalomethane content of Rifle Range on page 2-18 and extensive data shown on pages 6-12 through 6-18 overly stresses relationship with hazardous material/waste disposal. It is important to note that accuracy of data provided by U.S. Army laboratory is questionable. **It is recommended that TTHM information be de-emphasized throughout the report**." **(CLW 6332).**
- **Aug 1982 --** A prior version of the USMC timeline, which was posted on their website from 2004 through the Spring of 2008, asserted that at this point in time MCBCL called and notified the State of North Carolina Department of Health that they had detected VOCs in the water. The statement was later retracted. The former official Marine Corps heading read as follows:

1. ***Aug 1982 --*** *Camp Lejeune officials were not certain whether VOCs were coming from pipes, treatment plants, or from groundwater wells. Additionally, there was concern over the accuracy of the VOC findings. Camp Lejeune remained in contact with the State of North Carolina Division of Health Services regarding the findings of VOCs at Hadnot Point and Tarawa Terrace.*
2. This supposed notification is in contradiction of known documents from the N.C Division of Environmental Health, Public Water Supply Section. In a letter dated 01/04/00, Mike Bell advised their first contact with MCBCL on the matter of VOCs in the water supply was through a telephone conversation 12 Dec 1984. He could not find any record of any reports concerning detection of VOCs from 1982-1984. **(CLW 5010)**.

September 7 1982 – Supervisory Base Chemist, Elizabeth Betz advised MCAS New River high TTHM reading was a result of TTHM formation beginning in the reservoir and continue through the water treatment system. She recommended chlorination be moved to later in the water treatment process. **(CLW 618).**

Sept 8 1982 – MCBCL filed 7 permits for new water supply wells at the base. Six of these wells were for Hadnot Point and the seventh was for the Rifle Range. **(CLW 621).**

- **Sept 8 1982 –** Memorandum from Elizabeth Betz. Ms. Betz summarized the 1981 and 1982 testing at the Rifle Range water system. In her summary, Mrs. Betz noted the finished water was contaminated with organics which could be traced back to water supply well RR-97. Since then, well RR-97 was not used except for emergencies. **(CLW 635 + CLW 640). (note some of the same organics were found in TT and HP finished water but these wells were left operating, why?)**
- **Sept 23 1982 –** TTHM samples collected for Rifle Range and MCAS New River. The other water systems aboard MCBCL were not sampled. **(CLW 646).**
- **Sept 23 1982 –** The State of North Carolina granted permission of the seven new wells aboard Camp Lejeune. **(CLW 651).**

October 1 1982 – Letter from Assistant Chief of Staff Facilities to Base Maintenance Officer advising NREAD Branch will be realigned so as to be under the direct supervisory control of the Assistant Chief of Staff, facilities. This realignment brings the base's laboratory (Elizabeth Betz'a and subsequent environmental testing under direct control by officers of the Marine Corps. **(CLW 3882).**

- **Oct 11 1982 –** The State of North Carolina granted permission for the 23 September application to construct a new water supply well at Tarawa Terrace (TT-23). **(CLW 682).**

November 10 1982 – NACIP IAS out-briefing held aboard MCBCL. Attendees included LantDiv personnel, base officials, Marine Corps officers, and a representative from the IAS. No minutes of this meeting have been found. **(Cercla 2058).**

- **Nov 22 1982 –** Phone call from Jerry Wallmeyer to MCBCL. Mr. Wallmeyer's called the base to notify Robert Alexander (base Environmental Engineer) and the AC/S Facilities of five new sites which were discovered since the IAS team left. These sites included possible Nuclear, biological chemical materials at the Rifle Range chemical Dump, **(Cercla 208)**.
- **Nov 29 1982 –** Quarterly TTHM collected for all systems aboard MCBCL. Note prior to this collection only the Rifle Range and MCAS New River systems were analyzed on a monthly basis after August 1982. **(CLW 688 + CLW 605).**

December 7 1982 – Base officials notify the State of North Carolina that building 712 has ceased operating as a site for the child sitting service for the base. **(Cercla 268).**

- **Dec 9 1982 –** Grainger Labs warned MCBCL the analysis of the eight water treatment systems indicated resumption of VOC interferences in the TT and Hadnot Point systems. Trichloroethylene and tetrachloroethylene were cited as the compounds that were interfering with the analysis. No action was taken. **(CLW 691).**
- **December 14 1982 –** A change order was issued for The IAS to include 2 disposal sites in their final study. The report was released four months from the date of the change order. **(Cercla 2059).** Jerry Wallmeyer of LantDiv requested Camp Lejeune's environmental Engineer, Bob Alexander, to send a message from the base to LantDiv in order to initiate the change. The sites included two areas at the Rifle Range Chemical Dump, an old sawmill located near the mess hall grease trap, twenty drums of transformer oil, two sites near TLX Owl involving pesticides and a site located near the Rifle Range where an operator burying TCE, DDT and another chemical was injured during an explosion which occurred in 1970. **(Cercla 208).**
- **Dec 13 1982 –** The State of North Carolina requested MCBCL to follow up on their July 1982 agreement concerning groundwater monitoring at the Chemical landfill. Included in the testing was a requirement for "Total Organic Halogen". **(CLW 3993).**
- **Dec 21 1982 –** Elizabeth Betz called Bruce Babson to discuss a typographical error made on the last round of sampling. Mr. Babson expressed his concern to Ms. Betz over the solvents which previously interfered with prior Tarawa Terrace and Hadnot Point TTHM Samples. He advised that the PCE & TCE interference were still present in both systems. During the phone conversation Mr. Babson told Ms. Betz that the levels (TCE/PCE) at Hadnot Point had dropped for a while, however in the last sample the levels were relatively high again. The TTHM levels at MCAS New River remain just at compliance to the new standards **(CLW 698).**

January 4 1983 – Julian Wooten forwarded a request to the AC/S Facilities to have the base Environmental Engineer (Robert Alexander) look into the TTHM interference problem (PCE & TCE) at Hadnot Point and Tarawa Terrace water distribution systems. Attached to the request is the December 21st memo from Elizabeth Betz concerning her phone call with Grainger Labs and the interference caused by TCE and PCE. **(CLW 703).**

- **Jan 26 1983 –** TTHM samples collected from MCAS New River and Rifle Range only. **(CLW 6402).**

February 25 1983 – Julian Wooten, Director Natural Resources and Environmental Affairs Division (NREAD) aboard MCBCL, advised the Assistant Chief of Staff, facilities that the initial one year TTHM monitoring period will end in February. He advised that MCAS New River was not in compliance with TTHM standards and requested that they initiate immediate consult with state regulatory personnel on order to achieve compliance. Mr. Wooten also recommended that the base discontinue TTHM monitoring except for MACS New River and Hadnot Point. **(CLW 6402).**

- **Feb 25 1983 –** TTHM Samples taken from all water systems aboard MCBCL and sent to Grainger Lab. **(CLW 6393).**

March 1 1983 – OIC, DSSC Letter DSSC/DRF/EDW 11333 indicated that piece meal rehabilitation of the fuel facility (Hadnot Point) would not be cost effective and recommended a major rehabilitation of the facility to include relocation of bulk loading stands, dispensing pumps, unloading area and the administration building. Excavation of and exposure of all tanks and pipes was recommended. **(Cercla 96)** See PDF page 29.

Note the fuel farm remained operational until 1989. The draft IAS recommended testing of well HP 602 as part of the confirmation study because this well was actively pumping water for Hadnot Point and located down gradient and 1,100 feet from the Hadnot Point fuel farm.

March 7 1983 – Military Construction Project Data for project LE433R, POL Truck Dispensing Units at the Hadnot Point Fuel Farm. $209,300 was allocated to provide for improvements for new truck stands, pumps, valves, piping, and pavement/oil spill controls. **(Cercla 96)** See PDF page 20.

- **March 16 1983 –** Grainger Lab completed the quarterly TTHM analysis for the water systems aboard MCBCL and once again warned that there was interference due to trichloroethylene in the Hadnot Point samples. There was no reported interference with the Tarawa Terrace samples. No action was taken. **(CLW 6393).**

- **March 30 1983 –** W. R. Price, Utility System Operator General Foreman, advised Julian Wooten that there was an inadequate water supply for Tarawa Terrace and Camp Johnson for the upcoming summer months. Mr. Price commented that well field production has diminished from what was achieved in past years. He noted that a new well (TT-25) was constructed in April 1982 at Tarawa Terrace and that a second new well was under construction (TT-23). Mr. Price further cautioned that the continual use of these wells without periodic rest could result in well failures. (note, overuse of the wells will also result in an increase draw of contaminants into the well head.) **(CLW 707).**
- **March 30 1983 –** Col J.T. Marshall, Facilities Assistant Chief of Staff, wrote State Health Director, Ronald H Levine concerning building 712, former site of the base child sitting service. He advised that Chlordane and DDT were confirmed at the mix and wash pads but that concentrations within the playground area were shown to within detection limits. Air samples taken from within the building revealed no detectable DDT, malathion, or chlordane. **(Cercla 268).**

April 1983 – Initial Assessment Study for Marine Corps Base, Camp Lejeune was published and concludes that while none of the sites posed an immediate threat to human health or the environment, further investigation was warranted at 23 of the 76 sites. There was no mention in the IAS report of any problem or dangers to the potable water systems at Hadnot Point or Tarawa Terrace. TTHM and organic solvent contamination were discussed only in reference to the Rifle Range water treatment system.

> The Final IAS report reads that Recommendations for a Confirmation Study phase of the NACIP program was based on the findings of an IAS. A Confirmation Study is recommended only if the following circumstances exist:
>
> 1. Sufficient evidence exists to suspect that the activity is contaminated; and
>
> 2. The potential contamination may present a danger to (a) the health of civilians in nearby communities or personnel within the activity fence line, (b) the environment within or outside the installation.

No further studies will be conducted under the NACIP program, if these criteria are not met. As explained in this report, a Confirmation Study at MCB Camp Lejeune is warranted. The IAS concluded that while none of the sites pose an immediate threat to human health of the environment, 22 warrant further investigation under the Navy Assessment and Control of Installation Pollutants (NACIP) program to assess potential long term impacts. A Confirmation Study is, involving actual sampling and monitoring of the 22 sites is recommended to confirm or deny the existence of the suspected contamination and to quantify the extent of any problems which may exist. **(CLW 709).**

- **April 7 1983 –** The contractor for well TT-23 certifies that the newly constructed well was constructed in accordance with the state's well construction regulations. The well was pumped tested for 24 hours on March 15th. **(TT-23 Construction logs)**. This document is in contradiction to the official Marine Corps position that this well was completed in July 1984. The Marine Corps further contends that the well was found to be contaminated upon construction and thus, never put into production. Please refer to July 1984 entry for more information.
- **April 14 1983 –** Environmental Engineering Survey for Camp Lejeune prepared by Utilities, Energy and Environmental Division, NavFacEngCom. The report covered the period in time between October through the beginning of November 1982. The purpose of the report was to identify environmental facility, environmental operation, and maintenance deficiencies. The report covered Air Pollution, Potable water, Wastewater, Oil and Hazardous Waste/Toxic Substances. At the end of the summary is a paragraph which states "Any Environmental problem that should arise between surveys or problems inadvertently omitted during the current survey should be directed to NavFacEngCom. There were no discussions concerning Grainger lab's findings of PCE and TCE in the potable water for Camp Lejeune contained in this report **(CLW 6141).**
    1. Located in the Hazardous materials section of the report is the comment that the paint and sign shop (Bldg HDP-1410) waste solvents are such as cellulose acetate thinners are poured down the sink drains. The report recommended MCB Camp Lejeune should identify and stop the disposal of waste solvents into sanitary sewers.
    2. MCB Camp Lejeune should identify and stop the disposal of waste solvents into the sanitary sewers.
    3. Maintenance areas #TP-448, Bldg 902 and 901 were noted areas where cleaning solvent were stored. The area lacked appropriate waste oil handling facilities and as a result of spillage the areas have become heavily contaminated with oil.
    4. A used oil solvent study if presently scheduled for FY-84.
    5. TTHM readings were discussed in relation to MCAS. There was no mention of the August 1982 letter from Grainger lab nor interference in Tarawa Terrace or Hadnot Point's TTHM readings due to the presence of tetrachloroethylene and trichloroethylene in the potable water.

May 10 1983 – Letter from Jerry Wallmeyer at LantDiv to MCBCL. This letter was the subject of an intensive 4 week document search that occurred at the LantDiv repository in February of 1999. **(CLW 3048 + 3049)** The letter was reportedly never found but over 33 boxes of documents were uncovered. According to a memo dated 3 April 1985, the letter was an action plan to verify the existence and extent of VOC contamination aboard MCBCL. **(CLW 1195). (note, this letter is written three years after VOCs are first detected in the potable water at MCBCL. The letter is also is one and a half years before the contaminated wells at Hadnot Point and Tarawa Terrace are shut down. Another major point of concern is this question; Why was the information concerning VOC contamination of at least two potable water systems left out of the IAS? Why did Mr. Bailey of LantDiv recommend that Rifle Range well RR-97 not be used because of organic contamination in July 1981? Why wasn't the same recommendation made concerning the organic contamination present in the Hadnot Point and Tarawa Terrace systems?)**

- **May 31 1983 –** TTHM samples taken for all eight water treatment systems aboard MCBCL. **(CLW 6380).**

June 1 1983 – Assistant Chief of Staff for Facilities, Col J.T. Marshall, sent compiled test results for inorganic chemical, corrosivity analyses, and Trihalomethanes averages to Charles Rundgren at the State of North Carolina Water Supply Branch. He did not include the original Grainger Lab reports. Instead a compiled table of the Grainger data was submitted. **(CLW 934).**

- **Jun 15 1983 –** May TTHM samples analyzed by Grainger Lab. There are no PCE/TCE interferences noted for Tarawa Terrace. The Hadnot Point results show the same interferences as in past results but there are no notations concerning where the interference originates. In past reports PCE/TCE was noted to be the source of the interference. **(CLW 6380).** No action was taken.
- **Jun 21 1983 –** Wm Larry Elmore, Environmental Engineer, Water Supply Branch State of North Carolina, sent Col. Marshall a letter in response to the 01 June 1983 letter concerning inorganic chemical, corrosivity analyses, and Trihalomethane analysis. Mr. Elmore thanked Col. Marshall for the data

compilation but informed him that the State required the raw analytical data on the actual forms used by Grainger. The Grainger forms for the Trihalomethane analysis during the time period in question contain notations and warnings from Grainger Labs indicating the interference for Hadnot Point and Tarawa Terrace was the result PCE/TCE contamination. **(CLW 940).**

July 14 1983 – Letter from J.R. Bailey to CG MCBCL regarding groundwater monitoring results at the Rifle Range water distribution system. Mr. Bailey advised that the organic contamination detected in earlier testing was no longer present in the Rifle Range water distribution system. However, test wells continue to show organic contamination in the groundwater around the chemical dump. He advised the base that the organic contamination at the dump will be addressed via the NACIP Confirmation study. **(CLW 5937).**

- **Jul 15 1983 –** Col Marshall advised LantDiv the base has seen the 10 May 83 Wallmeyer letter and concurred with the scope of work detailed in the letter. He requested that Bob Alexander be contacted to set up the required meeting between base officials and the contractor performing the Confirmation Study. **(Cercla 2063).**
- **Jul 27 1983** – Samples taken for TTHM analysis from all eight systems aboard Camp Lejeune. These samples were lost in the mail. **(CLW 6377).**

August 11 1983 – The new Facilities Assistant Chief of Staff, Col. Lilley, provided the North Carolina Department of Human Resources a copy of the IAS report and advised 22 of the 76 identified sites warranted further investigation. However, none of the 22 sites were reported to pose an immediate threat to human health. **(Cercla 2004).**

- **Aug 25 1983 –** Samples from all eight water systems collected for TTHM analysis by Grainger Labs. **(CLW 949).**
- **Aug 29 1983 –** Grainger report on the August 25th samples indicated that PCE and TCE was present in the water samples from Tarawa Terrace and Hadnot Point. **(CLW 952).** No action was taken.

December 1 1983 – Letter from LantDiv to MCBCL concerning contract 81-B-3849 Inspection and Testing of POL tanks. The letter provided criteria for testing and inspection of tanks base wide. **(Cercla 1235).**

See 31 May 1985 entry concerning this inspection.

- **Dec 12 1983 –** Assistant Chief of Staff for Facilities, Col Lilley responded to the 21 Jun 1983 letter from Mr. Elmore, Environmental Engineer State of North Carolina. The letter was addressed to Mr. Rundgren. Col Lilley resubmitted the TTHM complied results and two additional tables explaining the results. Col Lilley also noted that per a 30 Nov 1983 telephone conversation with Dick Caspers at the Water Supply Branch, the original Grainger lab reports were not submitted as previously requested by Mr. Elmore **(these are the reports which contained the notes and warnings from Grainger that PCE/TCE were interfering with the TTHM analysis for Hadnot Point and Tarawa Terrace)**. Col. Lilley requests that Hadnot Point be reduced from quarterly TTHM sampling to annually. (this would eliminate most of the troublesome warnings from Grainger Labs). MCAS New River remained on a quarterly testing schedule **(CLW 6348).**

- **Dec 21 1983 –** Bob Alexander, Environmental Engineer MCBCL, called Arthur Mouberry N.C. State Division of Environmental Management and makes a verbal request for the construction of 55 monitoring wells aboard MCBCL. The wells were needed for the Confirmation phase of the NACIP program. **(CLW 6512 & CLW 6516).**

January 18 1984 – December TTHM samples for MCAS New River and Hadnot Point were analyzed. Interference was noted in the Hadnot Point samples but no explanation was given as in earlier reports. No action was taken. **(CLW 6362).**

- **Jan 20 1984 –** The State of N.C. granted permission for MCBCL to reduce TTHM sampling at Hadnot Point to one sample per quarter. **(CLW 977).**

February 9 1984 – Letter from Commanding General MCBCL to Commanding Officer, Field Medical Service School. AC/S facilities, Col. Lilley, advised commanding officer of the Field Medical School that Camp Johnson and Tarawa Terrace water treatment plants were to be abandoned after the expansion of the Holcomb Blvd water treatment plant. Construction was set to begin in January 1985 and completed by December 1985. **(Cercla 312).**

March 27 1984 – Charles Rundgren requests MCAS New River's sodium analysis for their water system. The request was forwarded to Camp Lejeune in April 1984. **(CLW 5333).** The results were submitted 30 April 1984. **(CLW 4133).**

April 9 1984 -- Grainger Labs conducts TTHM tests for Camp Lejeune. Sample #458 for the Laundry Room Sink at building FC-530 on Hadnot Point show interference from an unlisted contaminant as noted by Bruce Babson. Tarawa Terrace was not sampled and the remaining five samples taken for this period were for New River Air station. Three of the readings exceeded the MCL for TTHMS. **(CLW 5183 PDF page 46).**

April 16-18 1984 – Meeting between Confirmation study contractors and base official held aboard MCBCL to discuss scope of work, plan of action and milestones (POA&M). There are no records of the meeting other than a brief note on page 2-1 Confirmation Work and Safety Plan. **(Cercla 337).**

May 02 1984 – State granted permission for the construction of 2 new supply wells for the Hadnot Point water system. **(CLW 999).**

- **May 1984 –** Work and Safety Plan for Confirmation study. The work plan was the verification step in which the hired contractor will determine whether specific toxic and hazardous materials identified in the IAS were present in concentrations considered to be hazardous. The study will install ground water monitoring wells, sample soil, tissue, ground and surface water for contaminants. The verification step will be a general evaluation of contamination found and will serve as a basis to proceed with the Characterization step of the Confirmation Study. A draft report will be provided by August 1984 and a Final report will be provided by September 10 1984. **(Cercla 337).**

June 1984 -- EPA published proposed recommended maximum contaminant levels (RMCL) for TCE and PCE in drinking water and solicited public comment. Under the *Occurrence of VOCs in drinking water* heading, the registry reads: "VOCs are man made chemicals; their presence may indicate that a pollution incident has occurred." **(CLW 5055).**

- **June 7 1984 –** Article titled "Environmental Study kicks-off" appeared in the base newspaper The Globe. The article read that environmental engineers and scientist from ESE were going to spend six weeks drilling wells and collecting water, soil and sediment samples to determine if hazardous materials exist and/or have the potential to contaminate the environment on the base. AC/S, facilities Colonel Lilley stated "While contractor personnel will routinely wear personal protective equipment such as chemical resistant coveralls, we do not expect to expose anyone to any contaminants." The results of the survey were expected by August 1984. **(Cercla 132).**

July 1984 – Environmental Science and Engineering sampled the Hadnot Point Industrial area around the fuel farm and supply well HP-602 as part of their Confirmation investigation. Well 602 tested positive for VOCs (Benzene 380ppb, Dichloroethane 46ppb, Trans-Dichloroethene 7.8ppb, Ethylbenzene 8ppb, Trichlororfluoromethane 3 ppb, and Toluene 10ppb). **(CLW 1737 & Cercla 388).** According to Marine Corps and State of North Carolina documents, eight wells of the Tarawa Terrace distribution system were tested for VOCs in July 1984. The Marine Corps claims they found three of these wells contaminated with TCE.

Wells tested July 1984	TT-23	TT-26	TT-25

TCE	37 ppb	3.9 ppb	trace amounts

No apparent action was taken. The analytical data sheets for all of these tests are missing. It is important to note that the USMC provided the above mentioned readings in support of their first contention that TT well # 23 (New Well) was discovered contaminated upon construction (**CLW 2982**) and never ran. The fact the analytical data sheets are missing raises skepticism to the validity of their claim. The USMC's original position changed after it was discovered that well TT-23 (New Well) was indeed fully operational by 1984 and provided water to the Tarawa Terrace water distribution system and the consumers on that system. The USMC has since revised its position and now contends that the well began operating in July 1984. However construction documents indicate that well TT-23 (New Well) was pump tested by April of 1983 **(TT-23 Construction Log)**. Ironically, a month before the wells completion, the utilities foreman for the base for the base sent a memo to the utilities directory advising him of an impending water shortage for the summer of 1983 at Tarawa Terrace **(CLW 707).** It is hard to believe that a fully operational well was left dormant until July 1984, especially in the midst of a water shortage. ATSDR requested the construction paperwork for the well's pump house and equipment. To date, the USMC has been unable to provide the requested paperwork to ATSDR.

Finally, if the test results are correct then, the presence of VOCs in the raw water supply wells should have been a clear indication that a pollution event had occurred within the groundwater aboard the base. **No explanation has been given as to why it took five to seven additional months to shut down wells HP 602, TT-23, and TT-26 after the results of these tests. (CLW 2982, CLW 5094, 87 May N.C. Site Inspection Report, ATSDR Chapter A Summary of Findings).**

July 10 1984 – Grainger Labs conducts TTHM tests for Camp Lejeune. Sample #464 for the Laundry Room Sink at building FC-530 on Hadnot Point show interference from an unlisted contaminant as note by Edgar Folk for Bruce Babson. Tarawa Terrace was not sampled and the remaining five samples taken for this period were for New River Air station. Three of the readings exceeded the MCL for TTHMS. **(CLW 5183 PDF page 49).**

October 3 1984 – Grainger Labs conducts TTHM tests for Camp Lejeune. Sample #470 was from the Laundry Room Sink at building FC-530 on Hadnot Point. There are no notations of interference from technician Edgar Folk. Bruce Babson did not appear on the notes for this test. Tarawa Terrace was not sampled and the remaining five samples taken for this period were for New River Air station. Three of the readings exceeded the MCL for TTHMS. **(CLW 5183 PDF page 52).**

July – November 1984 – According to the Work Safety Plan for the confirmation study, there were three progress reports scheduled during this time frame. The work study plan also read that ESE will routinely contact the EIC to report the project status and any adjustments to the schedule. These reports and updates are missing. **(Cercla 337).** We attempted to locate the missing data at ESE (Now called MACTEC) but we were informed that the warehouse which contained these documents burned down during the middle of the night on 7 January 1999. The cause of the fire was never conclusively determined. **(Fl Div of State Fire Marshal report # 99-0110).**

November 30 1984 – Throughout the history of the drinking water contamination, the USMC has maintained that Well HP 602 was shut down after benzene (121ppb), TCE (1,600 ppb), DCE (630ppb) and PCE (24ppb) were found in the well water. **(CLW 1054 & CLW 4971).** The figures for these results were based on a 3 December sample of well HP 602. This sample was taken after the well was taken off line on 30 November. In fact, well HP 602 was sampled four and a half months prior to the 30 November closure of well HP 602. On 6 July 1984, Well HP 602 was sampled and found to contain benzene at 380 ppb and trace amounts of solvents. This data was collected while well HP 602 was an active pumping well for the Hadnot Point water distribution system. **(Cercla 388). The incorrect data (i.e. the 3 December samples) was included in the ATSDR 1997 Public Health Assessment (withdrawn April 2009), the 2007 GAO report on Camp Lejeune and the 2009 NRC Committee report on Camp Lejeune.**

During a 1988 briefing for the Technical Review Committee, Base Environmental Engineer, Robert Alexander stated, "This well (602) in particular triggered this whole investigation. It was an active water supply well at the time, and by sampling and analyzing, we identified the presence of some of these volatile organic compounds, waste solvent, fuel derived materials. Based on that finding, Camp Lejeune initiated a self-sampling of all of these wells". When asked about what levels were present in the water, Mr. Alexander comments "It depends on where you are…This was in the…and I am speaking off the top of my head, 30 ppb (actually it was 1,600 ppb), **fairly low but still toxic enough for you that you don't want to touch the water**. **(Cercla 47).**

December 3 1984 – Well 602 and several other wells from the Hadnot Point water system were sampled by base officials and analyzed for VOCs. **(Cercla 250).**

- **Dec 4 1984 –** VOCs were detected Hadnot Point water system. Samples were taken again and shipped to the lab via Federal Express. **(CLW 1054).**
- **Dec 6 1984 –** Robert Alexander, base environmental engineer, returned a call to J.R. Bailey at LantDiv. Mr. Bailey informed him that benzene was found in well 602, trichloroethylene was found in wells 602,601,603 and 608 as well as the finished tap water at the treatment plant. They agreed that confirmation testing should be initiated as soon as possible on these and other nearby wells. Mr. Bailey advised that a message containing an action planning was forthcoming. Mr. Alexander briefs Assistant Chief of Staff, facilities, Col. Lilley and Lt Col. Fitzgerald later that afternoon. Mr. Alexander advised base utilities to shut down wells 601 and 608. **(Cercla 250 & CLW 5635).**

Contaminant	**Hadnot Point Raw water**	**Hadnot Point Treated water**	**601**	**602**	**603**	**608**
Benzene	**0**	**0**	**0**	**121**	**0**	**0**
Chloroform	**10**	**16**	**0**	**0**	**0**	**0**
BRCL2Mthne	**6**	**10**	**0**	**0**	**0**	**0**
TCE	**46**	**200**	**207**	**1600**	**4.6**	**110**
DCE	**15**	**83**	**88**	**630**	**0**	**5.4**
PCE	**0**	**3.9**	**0**	**24**	**0**	**0**

Readings are in PPB

- **Dec 10 1984 –** December 4th samples results revealed continued VOC contamination of raw water and wells 601,602,605,608 and now wells 634, 637 and 642. **(CLW 1054).**
- **Dec 10 1984 –** Robert Alexander, base Environmental Engineer, called Mike Bell, Regional Engineer, State of North Carolina and advised him VOCs have been found in the Hadnot Point water system. He stated that four wells have been shut down and further testing was underway. **(CLW 1051).**
- **Dec 12 1984 –** Finished water at Hadnot Point tested and found to contain 30 PPB Chloroform. 2.3 ppb DCE and 2.3 ppb TCE. A 13 December test of raw (before treatment) Hadnot Point water did not detect any PCE/TCE/DCE in the water. (**CLW 5644**).
- **Dec 12 1984 –** Article appeared in Marine Corps news periodical, *The Globe*. The article reads: "Environmental officials are taking precautionary measures to ensure drinking water is free from possible contamination. As a result of water samples taken on 3 Dec, four wells in the Hadnot Point industrial area were found to contain some traces of organic compounds according to Base Environmental Engineer, Bob Alexander." The article goes on to read that none of the organic compounds are listed under the Safe Drinking Water Act. The article ends with a quote from Mr. Alexander, "every effort will be made to maintain the excellent quality water supply traditionally provided to residents of Camp Lejeune." **(Cercla 523).**

- **Dec 14 1984 –** Hadnot Point Wells 634 and 637 were shut down after testing positive for methyl chloride. **(CLW 1647 & CLW 4546).**

January 8 1985 – NavFacEngCom quality control lab checked and verifies the validity of JTC Environmental Consultanst's findings concerning VOCs in the Hadnot Point water system. Cheryl Barnett of NavFacEngCom advised that ESE results were not yet available and a letter from LantDiv will follow soon. **(CLW 1103).**

Jan 8 1985 – Enclosure from unknown letter to Bob Alexander. The enclosure detailed the proposed action plan to characterize the VOC problem at the base.

1. The 7 remaining WTP plants were to be surveyed for VOCs.
2. The 100 wells on base, including the ones previously identified, were to be sampled.
3. NavFacEngCom will evaluate alternatives to respond to these tests.
4. ESE (Confirmation study contractor) will be tasked to define the scope and solution to the problem (VOCs in the drinking water). **(CLW 1105).**

- **Jan 11 1985 –** Ground water quality standards were revised in the Federal Registry. **(CLW 1106).**
- **Jan 14 1985 –** Environmental Science and Engineering (ESE) released Evaluation of Data from First Round of Verification Sample Collection and Analysis. This report was the raw data from the first round of sampling (June to November 1984) and was provided to the Marine Corps during the time the base was scrambling to determine the extent of the potable water contamination. **(Cercla 388).**
    1. The data presented in this report consist of analytical results for samples of surface and ground waters, sediments, soils and fish tissue collected at 21 sites of potential contamination.
    2. 55 shallow ground water monitoring wells and 75 samples were collected.
    3. 17 existing potable water supply wells were sampled.
    4. On the margins for site 1 (page 2-8) there was a handwritten note that reads, "It appears that we do not have a true up gradient well. How will we explain away contamination in up gradient wells or should we expand well field now or in characterization."
    5. On the margins of site 6 (2-18) aka Lot 201 and 203 there is a handwritten note that reads, "sample 3 potable water wells on Piney Green Road for pesticides, dioxin and contaminants found in MCBCL work. And on Holcomb Blvd. It was not clear if well HP-651 was one of these wells discussed.
    6. On the margin for site 22 (2-34) aka Hadnot Point Industrial Area Tank Farm there was a handwritten note that reads, "We must send them our (1141's) report on well data, what it means and what wells to keep shut down.
    7. PDF Page 48. Hadnot Point Fuel Farm Site 22. "of **extreme importance** is the high level of benzene (380ppb) detected on the sample collected from deep water supply well no. 602. This benzene concentration far exceeds the 10 minus 5 human health risk limit of 6.6 ppb; therefore the **use of this well should be discontinued immediately."**
    8. PDF page 52 Hadnot Point Fuel Farm Site 22. **"The absence of contamination at well 22GW2 indicates that the migration pathway is deep, not shallow."**

    Note, the Confirmation Study contractor's monthly progress reports (August, October, September and November) a draft report and an evaluation of data scheduled for completion by September 1984 in the May 1984 Work and Safety plan for the Confirmation study are missing. The reports fall in between the actual sampling of well HP-602 on 6 July 1984 and the January release of this report. **(Cercla 388.)**

- **Jan 16 1985 –** All operating wells for Holcomb Blvd. and Hadnot Point sampled. **(CLW 4546).**
- **Jan 23 1985 –** Tarawa Terrace water treatment system sampled. Analysis completed by lab on Feb 5 1985. **(CLW 5570).**
- **Jan 27 1985 –** The water treatment plant operator on duty received 2 phone calls from residents of Paradise Point and Berkley Manor. They complained of a fuel smell in the finished water. The operator collected samples form the areas affected and when he returned the source of the fuel odor was located at the Holcomb Blvd WTP plant. The plant was taken off line and the 1 million gallon reservoir was drained.

Holcomb Blvd WTP is off line from Jan 27th through Feb 4th. **(CLW 4514).** During this time, finished water was provided to the areas served by Holcomb Blvd from Hadnot Point WTP by means of a bypass valve connecting the two plants together. **(CLW 4546).**

- **Jan 31 1985 –** The state of North Carolina takes water samples from Holcomb Blvd WTP to determine whether or not gasoline was still present in the system. There was no gasoline found. Instead high levels of TCE were discovered throughout the Holcomb Blvd water distribution system. **(CLW 4514 + 29 Jan NC State report).**

Analysis completed 2/4/85	**Hadnot Point WTP** From Distribution Pump	**Holcomb Blvd WTP** Bottom of Reservoir	**Holcomb Blvd WTP** Middle of Reservoir	**Holcomb Blvd WTP** Top of Reservoir	**Tank S-803** Fire Hydrant
TCE Reading	**900.02 ppb**	**24.2 ppb**	**25.8 ppb**	**26.8 ppb**	**849.0 ppb**
DCE Reading	**321.3 ppb**	**7.4 ppb**	**7.8 ppb**	**7.6 ppb**	**340.0 ppb**
Location	**Berkley Manor Elem.** Bldg 5400	**MOQ 2212 Cold Water** Chief of Staff residence	**MOQ 2212 Hot Water** Chief of Staff residence	**Building PP 2600** Firehouse	**Tank S-2323** Water Storage Tank
TCE Reading	**1148.4 ppb**	**724.7 ppb**	**612.9 ppb**	**890.9 ppb**	**407.1 ppb**
DCE Reading	**406.6 ppb**	**249.4 ppb**	**201.2 ppb**	**332.4 ppb**	**159.0 ppb**
Location	**Married officer's Qtrs** Fire Hydrant MOQ 2204	**Tank SLCH 4004** Storage Tank	**Bldg BM 5677**	**Bldg BM5531**	
TCE Reading	**839.6 ppb**	**318.3 ppb**	**981.3 ppb**	**905.5 ppb**	
DCE Reading	**307.6 ppb**	**107.5 ppb**	**368.7 ppb**	**335.0 ppb**	

The above table was compiled from **CLW 4515** + **CLW 5371**.

Feb 5 1985 – Tarawa Terrace Wells TT-26 and TT-23 (New Well) tested positive for VOCs.

Samples taken 1/25/85	**PCE**	**TCE**	**DCE**	**Vinyl Chloride**
TT-26	**1580 ppb**	**57 ppb**	**92 ppb**	**27 ppb**
TT-23	**132 ppb**	**5.8 ppb**	**11 ppb**	**0 ppb**

(CLW 5587, CLW 5571 & CLW 5593).

- **Feb 4 1985 –** Holcomb Blvd WTP is reactivated. Holcomb Blvd and Hadnot Point began flushing their systems. **(CLW 4546).**
- **Feb 4 1985 –** Samples taken from Hadnot Point wells January 16th are returned from the JTC lab. Several new wells were discovered to be contaminated with VOCs. Well 651 tested positive for extreme amounts of VOCs in the water. This well was located immediately adjacent to the base junkyard. Well HP-651 was shut down **(CLW 5594 & CLW 4546).**

Samples Taken 1/27/05	PCE	TCE	DCE	Vinyl Chloride
Well 634 (out of service)	**10 ppb**	**1,300 ppb**	**700 ppb**	**6.8 ppb**
Well 651	**386 ppb**	**3,200 ppb**	**3,400 ppb**	**655 ppb**
Well 652		**5.5 ppb**		
Well 653		**1.5 ppb**		
Well 601 (Out of service)		**26 ppb**	**8 ppb**	

- **Feb 7 1985 –** Areas in the Holcomb Blvd WDS including Berkley Manor Elementary school were tested again for VOCs. The results were received the same day. VOCs were present but in lower concentrations. Berkley manor Elementary tested 135.1 PPB TCE. **(CLW 5369).**
- **Feb 8 1985 –** Wells 652 and 653 on Hadnot Point and Wells TT-26 and TT -23 (New Well) at Tarawa Terrace were shut down. **(CLW 5095).**
- **Feb 22 1985 –** Hadnot Point WTP tested 1 ppb TCE in finished water. **(CLW 4533).**
- **Feb 27 1985 –** Three hour meeting between Rick Shiver, State of North Carolina, and Robert Alexander, Base Environmental Engineer. Mr. Shiver's brief notes indicated that he agreed to send copies of N.C. State regulations to Mr. Alexander. Mr. Alexander turned over copies of Hadnot Point data. **(CLW 4558).**
- **Feb 27 1985 –** Letter addressed to Jerry Hardwood at LantDiv from Calgon Activated Carbon Division. The letter was a follow up to a phone conversation concerning cost estimates for emergency potable water treatment systems for Trichloroethylene contamination at 1,600 – 2,000 PPB. Costs associated with this measure:
  1. Delivery, installation and supervision/training, $60-70,000
  2. Fee after first month, $ 5,000
  3. Extra Truckloads of filtrasorb and disposal, $ 21,000
  4. Shipment is within 24-48 hours of client authorization. **(CLW 6520).**

March 1 1985 – Action Brief concerning alternatives for providing water to Tarawa Terrace area. Because of the closure of wells TT-26 and TT-23, base officials realized that there will be an estimated shortage of 300,000 gallons per day of water at Tarawa Terrace beginning immediately and lasting through out the summer months. A list of 7 alternatives was proposed by Facilities Assistant Chief of Staff, Col. Lilley. **(CLW 1129)**

1. Install a new well at Tarawa Terrace. The problem with a newer well is that water in significant quantities is difficult to locate at Tarawa Terrace. Estimate cost: $80,000.
2. Transport water via tanker trucks from other water plants. However, the logistic of hauling 300,000 gallons per day was questionable. Estimated cost: $2,000 per day.
3. Tap into existing City of Jacksonville water line under Lejeune Blvd. There was a concern that the city may not be able to provide the water and there was a fear that the city would request reciprocating favors to the Marine Corps. Estimated cost: Unknown.
4. Change existing contract for Holcomb Blvd to construct a water line to Tarawa Terrace immediately. Estimated cost: Unknown.
5. Construct 8'' water line from Brewster Blvd to Tarawa Terrace across the railroad trestle on Northeast Creek. It was unknown if the state would approve the measure. Estimated Cost: $75,000.
6. Modify Tarawa Terrace plant to include aeration or granular activated carbon unit capable of removing VOCs. A time objection was made concerning installation but this is contrary to the letter from Calgon, please see entry dated 27 Feb 1985. Estimated Cost: $300,000.
7. **Re-activate and use contaminated well(s) that have been closed if required to maintain adequate water levels and pressure**. Lack of Federal MCLs for VOCs or restrictions for using VOC contaminated water is used to justify this measure. However, the brief also reads "the potential health hazards must be weighed against the need and cost of providing water from other sources." (Please see entry for BUMED 6240.3B and 6240.3C and note the language concerning chemicals in the water: "substances which may have a deleterious (harmful) physiological effect or for which the physiological effects are not known, shall not be introduced into the water system in a manner which would permit them to reach the consumer**."** Estimated Cost: zero.

Alternative 5 was selected for implementation but the estimated completion date was 5 June 1985 and state approval for the project was needed. There was no discussion concerning how to provide for the impending water shortage during while the auxiliary line was under construction. **(CLW 1129).**

Note Alternative 7 was used as a way to supply drinking water for Tarawa Terrace until 1 March 1987.

- **March 5 1985 –** Action Brief concerning Tarawa Terrace water supply system; use of contaminated well TT-23. The decision was made by the Commanding General of MCBCL to study the use of contaminated wells at Tarawa Terrace during the time needed to complete the auxiliary raw water line to Tarawa Terrace. The State of N.C. also needed data on the levels of VOCs in the finished water. A procedure to use TT-23 (New Well) was agreed upon. TT-23 new well was operated and then closed pending the laboratory results. **(CLW 4618).**

- **Mar 8 1985 –** Well HP651 retested and was again found to be positive for extreme levels of VOCs. Hadnot Point WTP and Holcomb Blvd WTP plants also test positive for VOCs. The water storage tank at Tarawa Terrace also tested positive for VOCs. **(CLW 5237).**

Samples Taken 2/5/85	**PCE**	**TCE**	**DCE**	**Vinyl Chloride**
Well 651	**400 ppb**	**18,900 ppb**	**7,580 ppb**	**168 ppb**
Hadnot Point WTP	**7.5 ppb**	**429 ppb**	**150 ppb**	**2.9 ppb**
Holcomb Blvd WTP		**2.8 ppb**		
Holcomb Blvd WTP		**1.5 ppb**		
Tarawa Terr STT 39A (water storage Tank)	**215 ppb**	**8 ppb**	**12 ppb**	

- **Mar 11 1985 –** One hour and 35 minute meeting between Robert Alexander and Rick Shiver. According to Mr. Shiver's notes, much of the meeting was spent discussing N.C. State regulations. Mr. Alexander advised Mr. Shiver that Tarawa Terrace will have a water shortfall during the summer months due to the closed wells. A pipeline connecting Hadnot Point was discussed. **(CLW 4558).**
- **Mar 11 1985 –** Letter from Julian Wooten (NREAD) to Col. Lilley, Asst. Chief of Staff Facilities, concerning standards for certain types of VOCs found in drinking water wells. A call was made to Paul Hubbell of LantDiv concerning the subject of the letter. Mr. Hubbell recommended that the base not attempt to contact individual states for information and that he would request the information from the EPA. **(CLW 1179).**
- **Mar 14 1985 –** Lab results from samples taken from Tarawa Terrace water distribution system using TT-23 new well. **(CLW 5362).**

Samples taken 3/11 & 3/12	**Plant prior to TT-23**	**TT-23**	**TT-23**	**Plant before Reservoir** 24 Hrs after TT-23	**Plant after Reservoir** 24 Hrs after TT-23
PCE	**0 ppb**	**14.9 ppb**	**40.6 ppb**	**21.3 ppb**	**6.6 ppb**

- **Mar 21 1985 –** Meeting held at MCBCL to discuss Tarawa Terrace water supply shortages and alternatives to address the problem. It was agreed that with two wells closed at the Tarawa Terrace water supply system, there was insufficient water to meet summertime demand. **(CLW 6596)**
  1. Tests indicate that if New Well is operated and blended, then detectable levels of PCE will exist in finished Tarawa Terrace water.
  2. Estimated levels are between 10-20 ppb.
  3. The auxiliary water line was expected to be completed by 01 June 1985.
  4. Limited data on health effects and containment levels. (See BUMED 6240.3C)
  5. The use of blended well water appears to not pose any extreme health threat to TT residents. Use will be on a contingency basis.

- **Mar 22 1985 –** Meeting between Rick Shiver and Robert Alexander concerning Tarawa Terrace. Mr. Alexander advised Mr. Shiver that Tarawa Terrace will experience a 300,000 gallon/day shortfall in production due to closed wells. He explained the proposal for an emergency pipeline from Holcomb Blvd. Mr. Shiver reviewed current North Carolina groundwater standards with Mr. Alexander. **(CLW 4558).**
- **Mar 26 1985 –**Holcomb Blvd water treatment plant expansion (contract 81-1644). The state expresses concern that contract was awarded prior to their approval and advised that they will need to review proposed well sites for approval. **(CLW 4727).**

April 3 1985 – Message from Commanding General Camp Lejeune to LantDiv. This memo was a status report on the situation at Camp Lejeune. The General's staff advises that 10 wells have been found to be contaminated and were closed. Water production has not been affected in 7 of the bases 8 water treatment plants. However, Tarawa Terrace was identified as a problem. The General's staff advises an auxiliary line will be installed to feed water into Tarawa Terrace. The base will also proceed with procuring equipment to enable local testing of VOCs in the water. The Holcomb Blvd WTP was slated to be immediately expanded, as recommended in an April 1979 report, to provide finished water to the Tarawa Terrace and Montford Point areas. The message also referenced Jerry Wallmeyer's letter 10 May 1983 letter and the need to expedite the study into the magnitude of the VOC contamination at Camp Lejeune. The message concluded with a request for LantDiv to provide milestones by 22 April 1985. **(CLW 1195).**

- **April 8 1985 –** Memo from Assistant Chief of Staff Facilities, to Base Maintenance Officer concerning changes in the State of N.C. groundwater classification and water quality standards. The standards were not yet in force. However, the new rules will mean that the water used aboard MCBCL will be required to be free of man made substances (i.e. VOC's). **(CLW 4733).**
- **April 8 1985 –** NavFacEngCom message to CG MCBCL. NavFacEngCom advised MCBCL that Environmental Science & Engineering (NACIP Confirmation study contractor) will review collected data and additional field sampling/laboratory data to develop interim monitoring recommendations for raw water aboard MCBCL. The contract was expected in July 1985. **(CLW 1239).**
- **April 18 1985 –** State of North Carolina grants permission to install 14 new supply wells aboard MCBCL. **(CLW 1189).**
- **April 22 & 23 1985 –** TT-23 (New Well) operated and used to supply water to residents of Tarawa Terrace. VOCs were detected in the water after each run of the well. **(CLW 1194).**
- **April 22 1985 –** Message from Commanding General MCBCL to LantDiv concerning inspection of POL tanks and a request for field investigation. The General's staff advises, in an attached report from ESE, that extremely high levels of VOCs (Benzene, Ethylbenzene, Toulene) and lead were detected in a monitoring well around the tank farm area. A request to expedite field investigations and testing to characterize the extent of the fuel leakage. **(CLW 1235).**
- **April 26 1985 –** Internal memo from Base Maintenance Officer to Assistant Chief of Staff Facilities, regarding water shortages in Tarawa Terrace area. Mr. Luttrell advises the AC/S that without water conversation measures or approval to turn on the VOC contaminated well this weekend, an anticipated water shortage for Tarawa Terrace will occur. Mr. Luttrell also requested that the AC/S and not NREAD make the operational decision on whether or not to use the contaminated well to supply water to the residents of Tarawa Terrace water system. Without higher guidance, he advised that he will not authorize the operation of well TT-23, even if it results in water outages. **(CLW 4768).**
- **April 28 and 29 1985** – TT-23 (new well) operated to provide water for the Tarawa Terrace water distribution system. **(CLW 4769).**
- **April 30 1985 –** Notice to residents of Tarawa Terrace from Commanding General MCBCL, Major General L.H. Buehl. The General informed the residence of Tarawa Terrace that 2 supply wells for the Tarawa Terrace water supply system were taken off line because "minute (trace)" amounts of several organic chemicals were detected in the water. He advised that there are no federal or state regulations for a safe level of these compounds but he did order the closure of these wells for all but emergency use (i.e. fire or when domestic supply is threatened). Nothing was said about the levels found or when the contamination was discovered or their possible health effects. The General went on to advise the residents served by the Tarawa Terrace system, that water consumption must be reduced. He outlined the water restrictions needed to be followed in order to conserve water. **(CLW 1191).**

- **April 30 1985 –** Memo titled Instructions to Operators at Tarawa Terrace. The guidance requested by Mr. Luttrell on 26 April was put into writing. The operators were advised to call the Command Duty Officer when the reservoir reaches 6 feet. The officer will provide approval and instructions to operate well TT-23. Well TT-26 was never to be operated. **(CLW 4771).**

May 9 1985 – Message from Commanding General MCBCL to CMC Washington. The message was an update on the situation at Camp Lejeune. The CG advises: 10 wells were now off line for VOC contamination, construction was underway for an auxiliary pipe line to Tarawa Terrace, conservation measures were in place, and that a press release had been issued. This message also confirms that TT-23 (New Well) had been used on three separate occasions even though the well itself was contaminated. The CG also states that additional monitoring and location of the source of the VOCs was being pursued by the NACIP program. Further testing was scheduled to begin in July. Finally, the CG states that the base will have a limited VOC analysis capability starting in June via the water quality control lab located aboard the base. **(CLW 1237).**

- **May 10 1985 –** News article *Jacksonville Daily News*. The article reads that a Navy study has found volatile chemicals in 10 deep water wells at MCBCL. "According to the memo from chief of staff, facilities, no federal or state regulations mandate an unacceptable level of these organic chemicals." Gunnery Sgt. John Simmons from Lejeune's Joint Public Affairs Office (JPAO) also advised that he had no information on whether the well water was dangerous to humans. The article also reads that the 10 wells were all taken off line in December instead of December through February as what actually occurred. Finally, Gunnery Sgt. Simmons stated that Tarawa Terrace can barely meet the current demand for water and that an auxiliary line was being constructed. Nothing was said about the continued operation of contaminated well TT-23 at Tarawa Terrace to prevent system shut down due to the ongoing water shortages. **(CLW 4784).**
- **May 11 1985 –** Article in *Wilmington Morning Star*. This article contains surprisingly more detail than the *Jacksonville Daily News* article. The article quoted Lee Mittelstadt, public information officer for the Solid and Hazardous Waste Management Brach of the N.C. Dept. of Human Resources. She listed some of the chemicals found by name and stated "(they) are toxic". Because the base was a federal reservation, the Marine Corps can not be fined by the state. Chuck Rundgren, head of the state Water Supply Branch, advised that "he did not think Camp Lejeune residents need to worry about getting bad drinking water. I think we kind of caught it right at the beginning." The article ends with Gunnery Sgt. Simmons reiterating the same half truth and half incorrect information given to the *Jacksonville Daily News.* **(CLW 4784).**
- **May 13 1985 –** Letter from the State of North Carolina Water Supply Branch to Commanding General MCBCL regarding new well sites for Hadnot Point and Holcomb Blvd. Mr. J. Fred Hill advised the base that he agreed with the suggestion to analyze and evaluate samples from these sites for VOC contamination prior to construction of any new wells. **(CLW 1198).**
- **May 15 1985 –** State of North Carolina Staff report concerning the application of 15 NCAC 2L to the well contamination problem at Camp Lejeune. The report was written by Rick Shiver, Regional Hydrologist Wilmington Regional Office. Mr. Shiver recommended that a notice of violation be sent to the base. The state will also work to identify the sources of contamination for the Tarawa Terrace wells. **(CLW 4773).**
- **May 15 1985 –** Letter from Regional Director State of North Carolina Dept of Natural Resources and Community Development to commanding General MCBCL regarding Notice of Violation Groundwater Classification and Standards, Source of Groundwater Pollution Camp Lejeune Marine Corps Base. The letter was addressed to Major General Buehl personally. Mr. Wakild advised the General that according to the NACIP study, the following organic contaminants were found in 10 potable water wells aboard base: tetrachloroethylene, trichloroethylene, dichlororethylene, methylene chloride, vinyl chloride, dichloroethane, benzene, toluene and dichlororbenzene. He also advised that all of the impacted wells were exposed to the tertiary sand aquifer between 50 and 200 feet below land surface. Mr. Wakild notified the General that the base was in violation of 15 NCAC 2L and therefore the Marine Corps must submit a plan of action within 30 days. The plan of action also required the Marine Corps to identify the source of the contamination, to define the scope of the contamination, future impacts of the contamination and proposals to remediate and restore the polluted ground waters. Finally, a specific schedule defining scope and time necessary to completed the above plan of action. Rick Shiver was names as a point of contact for the State. **(CLW 1200).**

- **May 24 1985 –** Commanding General MCBCL letter to NavFacEngCom regarding Confirmation Study second round sampling. NavFacEngCom was advised that the CG MCBCL has seen the comments on the first round of sampling results and additional concerns from the base have been attached. The General stated that the second round of sampling will be within one mile of each contaminated well both on and off base. Finally, there was a request to add a new contamination site located at MCAS New River to the NACIP study. **(CLW 1205).**
- **May 31 1985 –** Meeting held at MCBCL concerning Drinking water quality maintenance study group. There are no minutes of the meeting. The occurrence of the meeting was documented by a brief agenda. **(CLW 6574).**
- **May 31 1985 –** Message from Commanding General MCBCL to NavFacEngCom concerning contract 81-B-3849, Inspection and Testing of POL tanks. The Commanding General requested a field investigation for the fuel farm at Hadnot point after extremely high levels of benzene, ethybenzene, toluene and lead were detected in ground water monitoring wells in the fuel farm area. The testing performed during the July 1984 Confirmation study indicated the leakage of large quantities of fuel at the site. **(CLW 1235).**

June 5 1985 – Memorandum for the Commanding General Camp Lejeune from Chief of Staff concerning potential contamination of the City of Jacksonville by Marine Corps Base Camp Lejeune. In response to the General's concern, the chief of staff contacted Mr. Shiver of the state Division of Environmental Management and Camp Lejeune Natural Resources Director, Julian Wooten. Together they advised the general that Camp Lejeune is in no way affecting the aquifer presently being used by the city of Jacksonville. **(Cercla 205).**

- **Jun 6 1985 –** NREAD internal memo to director NREAD. Danny Sharpe reminded Julian Wooten that MCO P11000.8B requires CMC notification of any written notices of violation of pollution control laws (i.e. The 15 May violation letter from the state of North Carolina). **(CLW 4802).**

- **Jun 19 1985 –** Phone call from United States Geological Survey (USGS) Raleigh office to Robert Alexander, MCBCL, concerning the use of the USGS to study the ground water at the base. A meeting time was noted for July 23rd. **(CLW 1231).**
- **Jun 21 1985 –** Letter from Rick Shiver to Col R.A. Tiebout Assistant Chief of Staff, Facilities. Mr. Shiver advised the Colonel of the test results for the 9 April sampling of Tarawa Terrace Wells TT-25, TT-26 and New Well (TT-23). Well TT-26 was found to contain 630 ppb PCE, 18 ppb TCE and 1.4 ppb DCE. **(CLW 1244).**
- **Jun 21 1985 –** Memorandum to the file. Gold S Johnson Jr, Utilities Director, noted that per report from Danny Sharpe, MCAS New River was in violation of TTHM levels. Furthermore, the violation was not reported to the State and that this would probably result in yet another violation. **(CLW 1241).**
- **Jun 25 1985 –** Meeting 25 Jun 1985 to discuss TTHM levels at MCAS New River/Camp Geiger. The meeting was to discuss the probable upcoming violation letter from the State. Potential solutions were identified and it was agreed to wait until Fred Hill from the State arrived on base 28 Jun 1985. **(CLW 1280).**
- **Jun 28 1985 –** Fred Hill arrives at MCBCL and inspected the proposed new wells sites requested on 13 May for the Holcomb Blvd expansion and the TTHM problems at the base. The following measures were adopted in an attempt to manage the TTHM problem at the base:
  1. Effective 2 July 1985, finished water samples will be tested by NREAD and an independent lab.
  2. After testing, pre-chlorination will be discontinued for a one week trial.
  3. On 9 July 1985, samples will be taken and analyzed.
  4. Effective immediately, wells with the lowest potential for developing TTHM's will be run to the extent possible.
  5. After one week trial, data gathered will be studied for further action.
  6. Vendors will be contacted to obtain cost of replacing chlorination (a cause for TTHM) as a pretreatment for drinking water. **(CLW 1256 + CLW 5905).**

July 2 1985 – Pre-chlorination discontinued at MCAS New River in an attempt to manage the air station's TTHM problem. **(CLW 1267).**

- **July 16 1985 –** A meeting was held at Camp Lejeune to discuss the TTHM and salt water intrusion problems at MCAS New River. They identify salt water as a source of bromide which was needed to form bromoform (A TTHM). Base officials noted studies have established the station's water supply was subject to salt water intrusion and a corresponding increase in formation of bromoform. **(CLW 1267).**
- **July 18 1985 –** Golf Course watering Memo from Base Maintenance Officer to Assistant Chief of Staff, Facilities. The memo identifies that the utilities department was using treated water to water the base's 2 golf courses but due to poor record keeping and inadequate schematics, they did not know if it was Hadnot Point or Holcomb Blvd water. It was also noted that while the sprinklers were in operation, a considerable amount of water was being used. Mr. Price also advised that they really needed to pursue this. The AC/S facilities agreed in a hand written note on the page and comments "This is a good idea and we should push hard." The routing slip also contains a note from Mr. Price "Lets proceed with vigor and get info from PWO. **(CLW 1264 + CLW 1278). This memo is significant in that the Holcomb Blvd water system was later identified as the source for the treated water used at the golf courses. Each course can require anywhere from 300,000 to 500,000 gallons of water per day to maintain the vegetation. At the time of the contamination, Holcomb Blvd only had a 1.7 million storage capacity for treated water. To make up for the corresponding shortage of treated water, water was frequently transferred from the contaminated Hadnot Point system to Holcomb Blvd for use by the family housing areas served by that system. This was a subject of a recent CAP (Community Assistance Panel) meeting held at the CDC in Atlanta April 17th 2008.**
- **July 18 1985 –** 7 wells were closed at MCAS New River due to high chloride contamination.
- **July 18 1985 –** Memorandum from Rick Shiver to Perry Nelson of the Exploratory Unit. Mr. Shiver advises the contamination problem for Tarawa Terrace may originate from two facilities, ABC Cleaners and Glam-O-Rama cleaners. He recommended Glam-O-Rama be tested first because it was located directly across the street from the contaminated well TT-26. Mr. Shiver states the well was about 100 feet deep and was probably exposed to the (semi-confined) Yorktown Aquifer. If no plume exists for Glam-O-Rama, then ABC will be tested. Mr. Shiver ominously observes that the Tarawa Terrace well fields were down gradient to ABC and Glam-O-Rama cleaners. In the memo he wrote, "down-gradient well sites are a problem at ABC!" **(CLW 4810).**
- **Jul 23 1985 –** Meeting between Bob Alexander, base officials and representatives of the USGS concerning Camp Lejeune's ground water resources. Base officials requested the USGS to perform and appraisal of the ground water resources and geo-hydrology of MCBCL. **(CLW 4816).**
- **Jul 25 1985 –** Letter from Assistant Chief of Staff, Facilities, Col. R. A. Tiebout to Mr. Wakild of the N.C. Department of Natural Resources. The letter was the response to the State's May 19th Notice of Violation letter. Col. Tiebout enclosed a plan of action and advised that the anticipated start date will be September 1985. The projected completion dates for the characterization step and feasibility study were set for September and December 1986. **(CLW 1269).**
- **Jul 30 1985 –** Memorandum for request for assistance at Tarawa Terrace. Rick Shiver documents a request made to Oscar Howard to assist with the preliminary drilling around ABC Cleaners. This drilling may isolate the source of the contamination and will provide the data needed for further investigations by the State. **(CLW 4815).**

August 1 1985 – Phone conversation between Elizabeth Betz and Mike Bell concerning test well readings for the proposed new wells slated for use in the Holcomb Blvd expansion project. VOC readings related to gasoline were picked up in the test samples. Mr. Bell advised that the sampling procedure of using a gas powered air blower to clear the test wells may have contaminated the samples or caused any VOCs present to be volatized from the water. He recommended further sampling without a gas powered air compressor. Danny Sharpe hand wrote on the memo that he needed a recommendation on whether or not to sample or proceed with the drilling of the well. There is no documented response to his question. **(CLW 5912).**

- **Aug 6 1985 –** Memorandum to the Commanding General MCBCL from Chief of Staff concerning TTHMs at MCAS New River. Seven wells containing high levels of the compounds needed to produce TTHMs were taken off line. Saltwater intrusion was the cause of the problems with these seven wells. The closure of these wells brought the Air Station within compliance of the TTHM standard. A sample Public Health memo was prepared in case the state requires notification to consumers. Despite the fact that this system exceeded the EPA new maximum level for TTHM's, Colonel Tiebout wrote that the water

consumers for the MCAS system were to be notified **"if and when DHS (N.C.Dept. of Health Services) requires it".(CLW 1294).**

- **Aug 14 1985 –** USGS Proposal to appraise the ground water resources aboard MCBCL. The USGS identifies that MCBCL derives its water primarily from the ground water and was one of the largest entities in the state which withdraws ground water (8 million gallons per day). Operational and population growth aboard the base have increased the amount of waste generated by the base. As a result of this growth, significant amounts of waste containing hazardous waste and toxic organic compounds have been disposed of or spilled aboard MCBCL. **(CLW 4819). "**Most of the disposal and spill sites are directly underlain by sand and lack natural or synthetic barriers to contain the waste and prevent them from moving downward into the groundwater. Consequently, some of the waste have infiltrated to the water table and contaminated some of the ground water in the shallow and supply aquifers." **(CLW 4820).**
- **Aug 16 1985 –** Letter from AC/S Facilities, Col. Tiebout to Charles Rundgren, Water Supply Branch State of N.C. Col. Tiebout reported to the state the measures taken to reduce TTHMs at MCAS New River. The measures include the closure of 7 wells with high chloride levels. **(CLW 6339).**
- **Aug 29 1985 –** Letter from Commanding General MCBCL to Commandant of the Marine Corps concerning the US Geological Survey study of the ground water aquifer aboard MCBCL. The CG advised the Commandant that growing water supply needs coupled with the threat of present and future contamination of existing wells by disposed waste, brackish water and saline water has prompted his command to request the U.S. Geological Survey to study the geo-hydrology of the base and environs. The study was needed to determine what groundwater practices are needed to reduce further contamination and help assure water supply needs were met for the operation of the base. The Commandant was requested to review and provide comments/concurrence with the proposed study. **(CLW 6578)**

September 5 1985 – Letter from Commanding Officer Naval Hospital Camp Lejeune to Commanding General MCBCL regarding Environmental Heath Inspection Results for buildings SH-8 and SG-14. The inspection performed Occupational and Preventive Medicine Department revealed that the well and chlorination system used to provide water to these 2 buildings was inadequate causing the water to be susceptible to bacteriological contamination. The situation was first discovered in March 1984 and has continued to exist. The recommendation was made to close the water supply for these building for use as a drinking source. The outlets were secured with the warning signs posted appropriately. **(CLW 4849).**

- **Sept 15 1985 –** News article from *Raleigh News and Observer*. The article discusses in depth the environmental transgressions that occurred at the base and is in contrast to the articles which appeared in cities closer to the base. For example, the reporter cites that gallons of mercury, enough to poison 184,000 acres of foot deep water was drained from radar equipment and buried at the base. The article is a testimony to a public relations campaign waged by the base to minimize the magnitude of the problem aboard MCBCL. **(CLW 4855).**
  1. Base Environmental Engineer, Robert Alexander is directly quoted in the article as saying: "the 22 sites are not considered dangerous because only trace amounts of contaminants have been found to have escaped from the dumps. People had not been directly exposed to pollutants."
  2. Charles Rundgren, head of N.C. water supply branch is also quoted in the article as saying, "the wells had been plugged shortly after they became contaminated. The amount of chemicals found were not a threat to people who had been drinking the water during the short period. The water would not cause someone to become ill from drinking it, but ill effects could result from long term exposure."
  3. H. Lee Mittelstadt, Spokeswoman for the state Solid and Hazardous Waste Branch states that N.C. officials felt Camp Lejeune was taking adequate steps to protect people from possible exposure to the contaminants by closing the wells. The contamination from the 22 sites was a potential problem but not immediate threat because the locations were known and monitoring could detect future problems.
  4. Base AC/S Facilities Col. R.A. Tiebout "characterized all actions taken so far (closing wells, relocating the daycare and extensive testing) as precautionary measures. "

5. Wayne Mathis of the EPA states that he could not speculate on the potential risks of each site. The risk would depend on whether the material was in a stable location and whether people had access to the chemicals." "You wouldn't want kids out there digging in the soil."

- **Sept 17 1985 –** Meeting aboard Camp Lejeune MCB between Col. R.A. Tiebout, Robert Alexander, Base Environmental Engineer, and Mr. Elston from the State of North Carolina. No known records exist of the meeting except for a notation in a letter. The notation reads that at this meeting, the State made a formal request for the technical data collected from step 1A of the NACIP program be transmitted to the Division of Environmental Management for review and interpretation. **(CLW 4859).**

October 7 1985 – Letter from Rick Shiver, N.C. Regional Hydrologist, to Brigadier General J.B. Knotts, Commanding General MCBCL. The letter was a written follow up to the request for the technical data from the NACIP Step 1A (Confirmation Study). Mr. Shiver advised. "the data is requested in lieu of the formal report, since some portions of this report are believed to be in error." **(CLW 4859).**

- **Oct 8 1985 –** Letter from Chuck Wakild to Perry Neslon concerning Larry Fitzpatrick's inquiry into the groundwater problems aboard MCBCL. Mr. Wakild enclosed a report from Rick Shiver titled "An Assessment of Groundwater Pollution Sources at Camp Lejeune" for his review. Mr. Wakild warned that considerable public attention will be focused on this problem and how we (the State of N.C.) deals with it. **(CLW 1297).**
- **Oct 8 1985 –** Report from Rick Shiver titled: An Assessment of Groundwater Pollution Sources at Camp Lejeune. The report is an overview of the NACIP program and an assessment of the State's authority to participate in the groundwater remedial projects aboard the base. Mr. Shiver noted the results of the July 1984 ground water studies were documented in a report provided to the Marine Corps in February 1985. He also stated in the letter that: "As the Marine Corps disagrees with the conclusions in this report, it will not release a copy of it to any outside agency. Recently, however, the Marine Corps did agree to provide DEM copies of the technical data for review and interpretation." **(CLW 4871-73).** To date this report (mentioned in this document by Rick Shiver) has not been released to the public despite several Congressional requests to produce this report. In April of 2008, Congressman Allen Boyd (D Florida) again requested the missing report and was given **Cercla document #388.** Titled "Evaluation of Data From First Round of Verification Sample Collection and Analysis." This document is the technical data given to the State and later the EPA and not the report cited by Mr. Shiver in the above mentioned text.
- **Oct 8 1985 –** Memorandum from Elizabeth Betz regarding the State's request for recently received laboratory reports. Betz advised Danny Sharpe that there are several problems concerning the data she was preparing for the State. Ms. Betz advised that the distilled water analysis was done as part of the laboratory control and was not required to be submitted to the state. However, the data was part of the report which the state was requesting. Betz also advised that the base had not performed the required sodium analysis of the water. The test and report were overdue. **(CLW 5344)**
- **Oct 25 1985 –** Letter from Perry Nelson to Larry Fitzpatrick of the State of North Carolina. Mr. Shiver's report and supporting documents concerning Camp Lejeune were forwarded to Mr. Fitzpatrick. Mr. Nelson advised that the State was seeking a legal opinion from the Attorney General to address the State's authority concerning enforcement of remedial actions aboard Camp Lejeune. **(CLW 4869).**
- **October 28 1985 –** Test results for wells TT-26, TT-25 and now TT -25 showed continued contamination with VOCs. **(CLW 5476).**
- **Oct 29 1985 –** Memorandum from Perry Nelson to Jim Mulligan, Mick Noland and Chuck Wakild concerning Managing Groundwater Contamination on Military Installations. Mr. Nelson advised the Groundwater Section Chief or higher authority will handle all communications with military installations concerning clean up and future investigations. **(CLW 4867).**
- **Oct 29 1985 –** Letter from Base AC/S Facilities, Col. Tiebout to Charles Rundgren, Water Supply Branch State of N.C. concerning TTHM and inorganic chemical analysis. The sodium analysis turned into to the state was outdated and no mention was made as to when the State will perform the required test. **(CLW 5337).**
- **Oct 31 1985 –** Letter from AC/S Facilities Col. Tiebout to Rick Shiver, State of North Carolina, concerning the request for technical data letter dated 7 October 1985. Col Tiebout advised in the letter that the enclosure includes a site plan for each site, water quality data and water level data. The enclosure is

Cercla document # 388, “Evaluation of Data from First Round of Verification Sample Collection and Analysis. **(CLW 4900).**

- **Oct 31 1985 –** Phone Call from Anne Rosecrance JTC Lab to Elizabeth Betz. Ms. Rosecrance advised that JTC did not detect any VOCs in well TT-25. Hadnot Point and Tarawa Terrace treated water samples were also negative for VOCs. **(CLW 4901).** Ms. Betz then sent a memo to Base Director NREAD recommending that sampling for VOCs be limited to finished water and completed on a weekly basis.

November 1 1985 – Conference aboard Camp Lejeune between base officials and EPA representatives Wayne Mathis and Jim Holdaway concerning findings of the NACIP study and the groundwater contamination aboard the base. The minutes of the meeting were preserved by Rick Shiver in his handwritten notes. **(CLW 4903).**

1. The EPA “advises” Camp Lejeune to identify specific sources which resulted in the contamination of the community water supply. It was pointed out to the EPA representatives that the EPA has no authority to require action aboard MCBCL.
2. Mr. Holdaway countered and advises recent changes in RCRA permitted the EPA to address environmental issues after 08 Nov 1984 for inactive sites on base.
3. Mr. Mathis advised existing data substantiates a risk to a population thus triggering consideration for MCBCL to be included in the National Priority List (NPL). The Department of Defense was responsible for implementing CERCLA on behalf of military installations.
4. Base officials refused to release the initial Confirmation Report from January 1985 and countered that the report is erroneous. The EPA representatives explain that the Confirmation Study initial report will be the basis for listing MCBCL on the NPL. Base Environmental Engineer Robert Alexander resisted this idea and advised the report is erroneous. Mr. Shiver adds a postscript note to himself, “CERCLA imposes punitive measures only for failure to report and concealment of data. “
5. Mr. Shiver explains the State’s participation in the investigation for the source of the PCE contamination in Tarawa Terrace’s wells. The State had already identified the source but this information was not released at this meeting.
6. Another post script note indicated that emergency water line became active 01 Jun 85.

- **Nov 6 1985 –** Memorandum to the Commanding General MCBCL from Chief of Staff Facilities, Col. Tiebout advised the CG that TT wells 23 and 26 remain contaminated and well TT-25 was detected to contain PCE at 0.43 ppb. The state recommended more sampling be done to determine if contamination was migrating to this well. Col. Tiebout also advises no VOCs have been detected in the finished drinking water since July 1985. Finally, the Colonel advises that the State has identified ABC One Hour Cleaners to be the source of contamination at Tarawa Terrace. **(CLW 1338).**
- **Nov 13 1985 –** Base Order 11011.2 Encroachment control. As directed by orders from HQMC, the CG of MCBCL implements an Encroachment Control program/board aboard MCBCL. Encroachment was defined as any action planned or executed in the vicinity of Camp Lejeune or normal areas of operation which inhibits, curtails, or posses the potential to impede or adversely affect mission performance aboard MCBCL. Competition for potable water assets and environmental/natural resource conversation legislation were identified as examples of encroachment as used within the order. **(CLW 1342).**
- **Nov 18 1985 –** Letter from Arthur Linton of the EPA addressed to Commander Atlantic Division NavFacEngCom to the attention of J.R. Bailey, Environmental Quality Branch. This letter highlights some of the EPA’s input and concerns with the NACIP study.
    1. Phase 1 reports are heavily dependent on the use of indicator parameters to make conclusive decisions about the releases of pollutants at a given location.
    2. The EPA recommends that samples of groundwater and/or surface water be collected and analyzed from each site.
    3. The NACIP study should contain sufficient geologic and hydrological data to support conclusions regarding the hydro-geology and drainage of a general area. This data will also be necessary for a valid assessment of probable direction of possible horizontal and/or vertical migration of contaminants.
    4. When studies indicate a significant potential release or detect migration of pollutants, then data should be collected that address potential risks of exposure to human populations.

5. **Based in information and preliminary data presented by MCBCL staff during the 1 Nov 1985 meeting, the USEPA believes that there is sufficient data indicating potential extensive contamination of groundwater in several areas of Camp Lejeune to warrant immediate consideration of this site (MCBCL) for inclusion on the National Priority List (NPL) due to the potential risk to a population dependent on potable ground water as is the case aboard MCBCL.**

- **19 Nov 1985—**The Hadnot Point water treatment plant tested positive for benzene at 2,500ppb, 2,600ppn methylene chloride and 100ppb toluene. The analytical data sheets for these results are missing. There is also a notation "not representative" written above the entry. **(CLW 1406)**.

December 1 1985 – Summary report on Groundwater Investigation to Define Source(s) of Tetrachloroethylene that have Contaminated Three Community Water Supply Wells at Tarawa Terrace MCBCL by Rick Shiver. **(CLW 4826).**

1. April through September 1985, the State of North Carolina Department of Natural Resources and Community Development (DNCRD) conducted a groundwater investigation to define the source of PCE present in 3 wells for the Tarawa Terrace water system aboard MCBCL.
2. The hydro-geology underneath Tarawa Terrace indicates that the territory sand system is unconfined (and thus would easily allow movement of contaminants in the groundwater).
3. The cone of depression for a well in the Tarawa Terrace well field system attains a radius of 900-1500 feet. ABC Dry Cleaners is about 970 feet from well TT-26. Glam-O-Rama cleaner is roughly 125 feet from well TT-26. The cone of depression created by pumping acts like a funnel that focuses water and contamination towards the well. Over pumping of a well or well field will accelerate this process.
4. In September 1985 well TT-25 showed VOC contamination.
5. The report concludes that the interpretation of the data suggests the PCE plume originates from the septic tank-soil absorption system at ABC One Hour Dry Cleaners. The study results did not implicate Glam-O-Rama as a significant source of PCE contamination.
6. The EPA was contacted by the state and provided a copy of Shiver's findings.

- **10 Dec 1985 –** The Hadnot Point water treatment plant tested positive for benzene at 38ppb, 10ppb toluene. The analytical data sheets for these results are missing. **(CLW 1406)**.

- **Dec 19 1985 –** Letter from Chuck Wakild to Perry Nelson concerning Rick Shiver's report on ABC One Hour Cleaners. Mr. Wakild recommended the state send ABC a Notice of Violation of N.C. State's groundwater statutes. **(CLW 4906).**

January 24 1986 – Internal memo from Director NREAD to Facilities, Environmental Engineer, facilities Dept, and Base Maintenance Officer MCBCL concerning analysis of drinking water systems aboard Camp Lejeune. Periodic readings of Benzene were dismissed as a quality control problem and were arbitrarily discounted. Shortages in NREAD personnel have affected the base laboratory's ability to produce certified data concerning the water systems aboard the base. Finally, Mr. Wooten advised that careful planning will be required to offset additional cost. The base will hold actual sampling (for water systems aboard base) to the essential minimum which protects public health and provides compliance to standards, laws and regulations. The last paragraph contains an instruction to the base Environmental Engineer but the instructions are blacked out. **(CLW 1406).**

February 3 1986 – Letter from Arthur Linton of the EPA to Commander Atlantic Division NavFacEngCom attention J.R. Bailey regarding 01 Nov 85 meeting aboard MCBCL and Confirmation study. In particular, the quality of the water obtained from wells in the Hadnot Point area of MCBCL were reviewed at some length. **(CLW 5430).**

1. Mr. Linton advises that during the discussions on 01 Nov 85, Mr. Mathis and Mr. Holdaway became aware that there was evidence derived from sampling in 1983 or1984 of diffuse contamination of ground water with unspecified organic substances **(this information given to the EPA is in direct contradiction to**

documentation which indicated that at least 2 potable water systems contained tetrachlororethylene and trichloroethylene as early as October 1980).

2. The EPA representatives were led to believe that the contamination did not extend to the treated potable water. "It was also established that there was no contamination detected in treated potable water distributed at Camp Lejeune." **Once again this is in contradiction of known documentation that named and confirmed the presence of specific VOCs in raw AND treated potable water aboard MCBCL.**
3. At the recommendation of Mr. Mathis, Mr. Linton made a formal request for the NACIP Confirmation Study results for monitoring wells and potable wells so they can insure there was no contamination present in the Camp Lejeune water supply. This report was denied to the EPA because that the data was still in raw form and under review. Mr. Linton countered by requesting a brief on the report and copy of the report when it was published.
4. Mr. Linton finishes by informing Mr. Bailey that the EPA was concerned that a potential for human exposure to hazardous substances and hazardous waste via the Camp Lejeune water supply may exist due to the presence of such materials in ground water in the general vicinity of the potable well field. The existence of such a potential exposure would warrant immediate consideration for MCBCL for inclusion on the National Priority List. **At the time that this letter was written, the EPA was unaware that a documented contamination event had already occurred involving the treated potable water systems aboard MCBCL.**

- **Feb 6 1986 –** Letter from J.R Bailey to Arthur Linton of the EPA regarding the 18 Nov 85 EPA letter. Mr. Bailey concurs with all of the points outlined in Mr. Linton's letter with the sole exception of the last point regarding the National Priority List. Mr. Bailey disagreed with the idea of including MCBCL on the NPL and stated that the NPL will result in slower cleanup time and delays. He informed Mr. Linton the state and public were being kept informed through meetings with the state and news paper articles in local papers (Please see entries dated 12 Dec 84, 10 May & 11 May 1985, and 15 Sep 85.) Mr. Bailey stated that they were proceeding as quick as possible with the confirmation study and will provide the report as soon as it becomes available. **(CLW 5415).**
- **Feb 6 1986 –** Handwritten memo from Elizabeth Betz attached to Mr. Bailey's 06 Feb letter to Mr. Linton. Ms. Betz stated that she has read both the 18 Nov 85 EPA letter and Mr. Bailey's response of 06 Feb 86. She advised that she agreed that MCBCL should not be added to the NPL. She also stated that she does not have the site maps of sample results from round one and can not comment on it. Ms. Betz also noted that Phase one of the NACIP did not find well HP-651, the worst of all the wells, and that she hoped they were headed towards HP-651 because it was not sampled in relation to any NACIP site. **(CLW 5415).**
- **Feb 7 1986 –** Message from Commandant Marine Corps to Commanding General MCBCL. The complete message is missing however, in a letter dated 12 Mar 1986, the message was cited as a reference for the Commandant's approval for the USGS survey of the ground water aboard the base. **(CLW 1445).**
- **Feb 13 1986 –** State report to update status of subsurface investigations at MCBCL. The report indicated that the state was relying on the NACIP study to investigate and provide remedial actions for areas aboard the base. A notice of violation was served to the owner of ABC One Hour Cleaners but due to his health and problems with the completeness of the notice, an extension was granted. **(CLW 4912).**
- **Feb 18 1986 –** Phone call between Jim Holdaway (EPA), Cherryl Barnett (LantDiv) and Paul Rakowski (NACIP). The conversation was documented in a 25 Apr 1986 letter. The only known result of the conversation was that Mr. Holdaway suggested a review meeting to be held at Camp Lejeune. **(CLW 4929).**
- **Feb 24 1986 –** Phone call between Cheryl Barnett (LantDiv) Robert Alexander (Base Environmental Engineer) concerning records retention. It is agreed that all available data on drinking water for the NACIP program will be centrally stored at the LantDiv Environmental Quality Branch. **(CLW 1426).**

March 6 1986 – Letter from AC/S Facilities, Col. Tiebout to Mr. Arthur Linton of the EPA concerning 1986 Environmental compliance. Col. Tiebout advised notification in accordance with CERCLA has been filed. The NACIP phase two will set 1986 milestones once contract negotiations were completed. The Colonel stated that no detectable levels of TCE or DCE in water since April 1985 (note Benzene and PCE were not included). Once again there was no discussion of past finished water contamination aboard the base. **(Cercla 1999).**

- **Mar 11 1985 –** Letter from Commanding General MCBCL to Commander NavFacEngCom regarding ground water quality data. Col. Tiebout advises NavFacEngCom that his letter contains data provided by the State of N.C. concerning the ground water contamination and data obtained by the Navy contract laboratories should be combined and forwarded to the EPA in response to the EPA letter of 03 Feb 1986. **(Cercla 297).**
- **Mar 12 1986 –** Memo from AC/S Facilities, Col. Tiebout to Comptroller authorizing the transfer of $80,000 to fund the USGS ground water study for MCBCL. **(CLW 1445).**

April 8 1986 – memorandum for the file concerning dates raw water wells secured due to VOC contamination. The memo lists all the previously closed well and the dates of closure. There was a handwritten note added after the memo was written indication well TT-25 was closed 14 Jan 87 and well 645 was closed 13 Jan 87. **(CLW 1455).**

- **Apr 16 1986 –** Letter from Fred Hill to Utilities director G.S. Johnson Jr. regarding base visit 10-11 April 1986. Mr. Hill documents that work was progressing with expansion work. Several "situations" were discussed with Mack Frazelle, Water Treatment Operator Foreman, including a light oil film on the water surface at Holcomb Blvd and an apparent lack of maintenance at the soon to be abandoned Tarawa Terrace and Camp Johnson facilities. Mr. Hill also advised that if the base proceeds with plans for a private contract to operate water treatment facilities, the state would like to review the final contract. **(CLW 1456).**
- **Apr 25 1986 –** Letter from J.R. Bailey to Arthur Linton, EPA regarding EPA letter 03 Feb 1986 concerning the groundwater contamination aboard MCBCL and the NPL. **(CLW 4927).**
    1. Mr. Bailey agrees to provide the EPA with the analytical data from testing and monitoring of ground water and potable wells aboard MCBCL. The NACIP Evaluation of Data report **(Cercla 388)** was listed in the enclosures and was discussed in the letter as preliminary report prepared by ESE.
    2. The Grainger, Jennings and Army Lab results dating back to October 1980 were not included in the documents provided to the EPA.
    3. Mr. Bailey advises it was the receipt of ESE's raw analytical data which prompted the testing of the base well system in beginning in December of 1984 for VOCs.

June 5 1986 – Letter from Douglas Dixon of N.C. Groundwater section to Dr. Ted Taylor, Toxicologist Environmental Epidemiology Branch. Mr. advises that the Wilmington Regional Office has filed a request for a risk assessment concerning the chemicals found in the ground water at Tarawa Terrace and ABC One Hour Cleaner. **(CLW 4947).**

1. **Jun 12 1986 –** Letter from Dr. Taylor to Douglas Nixon regarding risk assessment request dated 05 Jun 1986. **(CLW 4952).**
    1. recent studies by the National Toxicology Program indicate that Perc (PCE) showed clear evidence of carcinogenicity in both rats and mice.
    2. According to the EPA Carcinogen Assessment Group, Perc (PCE) would be listed as a probable human carcinogen.
    3. 0.7 ppb of Perc would be the equivalent to a 1 x10 to the (-6) incremental cancer risk.
    4. Toluene and benzene were detected in the monitoring wells and were not chemicals used in dry cleaning.
    5. TCE, DCE and Vinyl Chloride have been shown to be biodegradation products of Perc (PCE).
    6. Vinyl chloride was a known human carcinogen and the removal of Perc (PCE) to prevent the formation of vinyl chloride should serve as a further incentive for clean up.

July 1 1986 – Memorandum for Area Coordinators for public affairs guidance on Hazardous waste site clean-up. **(CLW 6551).**

1. The purpose of the memo was to address recently published EPA regulations regarding public awareness of NACIP activities and clean up.
2. The National Priority List was an EPA listing of the Nation's worst hazardous sites and was required by CERCLA (Comprehensive Environmental Restoration Compensation and Liabilities Act).

3. NPL sites were required to follow written Community Relations Plan which must include the following: Site Specific NACIP objectives, Community Relations plan, a schedule for the completion of NACIP activity and a mailing list of affected and interested groups and individuals. **Note, at this time MCBCL was not a NPL site.**
4. The Public affairs activity must be proactive to assure the public that the Navy was not hiding information concerning former hazardous waste sites on Navy property.

- **July 7 1986 --** Phone conversation between Jerry Perkins (Acting Director N.C. Water Supply Branch) and Robert Alexander (Base Environmental Engineer). Mr. Alexander makes the verbal request to reduce VOC sampling of finished water for Hadnot Point and Tarawa Terrace from weekly to quarterly. The same request was made for well TT-25. The request was granted. **(CLW 1521).**

- **Jul 31 1986 –** Meeting aboard MCBCL concerning NACIP study. Details of this meeting were preserved in the handwritten notes of Rick Shiver. **(CLW 4955).**

1. Mr. Linton of the EPA advises that changes in the regulations over the next 18 months will impact MCBCL and the NACIP study. The EPA contends that MCBCL will rank high on the hazards ranking system for the National Priority list.
2. The EPA feels that the NACIP program and study was not consistent with the National Contingency Plan and wants the NACIP study aligned with RIFS (Remedial Investigation Feasibility Study).
3. The EPA will now require facilities to assess active sources (I.E. Tank Farms & land fills) in addition to inactive sources as previously required.
4. The EPA agrees that the Hadnot Point area was the primary area of concern. **Note the source of contamination for well HP-651 was not determined at the time of this meeting. Well HP-651 is outside the Hadnot Point area referenced in this meeting.**

August 7 1986 – Letter from Chief of Naval Operations concerning Hazardous Waste Site Cleanup-Public Affairs Guidance. The letter was a follow up to the 1 July 1986 guidance memorandum. The previous letter did not necessarily apply to MCBCL as it was not on the NPL. However, the August letter clearly states that Navy policy to be implemented at all installations with hazardous waste sites under study by NACIP was to be proactive in order to assure the public the Navy was not hiding information concerning former hazardous waste sites on Navy property. **(CLW 6553).**

- **Aug 7 1986 –** Phone call from Dr. Miller at the University of North Carolina to Robert Alexander concerning groundwater research. Dr. Miller advises that the University has funds available to install monitoring wells and sample groundwater as part of the School of Engineering's curriculum and research. Dr. Miller was invited to meet Mr. Alexander at the base 12 Aug 1986. Nor records exist from that meeting.

- **Aug 14 1986 –** Letter from Geologist review team to Arthur Linton (EPA) concerning NACIP scope of work. **(Cercla 210).**

1. The geologist recommended that the report address why PVC was being used to construct monitoring wells. (PVC may affect VOC testing).
2. Composite sampling of Hadnot Point to reduce cost will do little to pinpoint wells that were contributing contaminants to the water supply system or the movement of contaminants through the shallow aquifer.

September 17 1986 – Letter from Col. Tiebout to Staff Judge Advocate regarding Public Affairs Guidance on the NACIP Program. Col. Tiebout requests JAG to review the 01 Jul and 07 Aug Memos from CNO concerning Navy policy towards hazardous waste sites and CERCLA. He advised that MCBCL was not currently listed on the NPL but that a formal community relations plan should be considered in the future. **(CLW 6551).**

- **Sep 24 1986 --** Base memo from Commanding General concerning additional monitoring by NACIP aboard MCBCL and MCAS New River. The General advised that the Globe will carry an article on the current NACIP activities and local media coverage was expected. He stated that although there were no known human health concerns or dangerous environmental hazards present, a policy of caution and thorough documentation was in effect. **(CLW 1523).**
- **Sep 25 1986 –** Letter from J.R. Bailey to Commanding General MCBCL regarding the USGS proposal to study the water aquifer. Mr. Bailey advised the general that while both the Marine Corps and the USGS wish to study the groundwater the needs of each entity were different. Mr. Bailey then stated "The USGS proposal would have the Marine Corps fund a study suited for the USGS goals but considerably beyond the needs for the Marine Corps." He states that there was a considerable overlap between ESE's work and the USGS proposal including the sampling of contaminated wells to determine the extent of contamination in the groundwater. Mr. Bailey went on to state that the USGS proposal was over priced and that analysis of salt water intrusion can be done with a simple desk top computer. **Note the objection from Mr. Bailey concerning the sampling of contaminated wells is significant. Sampling by an outside agency would mean that control of what was known about the extent of the contamination would be outside the influence of NavFacEngCom and the Marine Corps. (CLW 1527).**

January 21 1987 – Meeting at building 425 aboard MCBCL on review of the NACIP Program. The meeting was documented by the hand written notes of Rick Shiver. **(CLW 4963).**

1. NACIP confirmation study has verified that 15 sites have contamination, 2 sites show trace levels of DDT, 2 sites have fuel contamination and 3 had no evidence of contamination.
2. Hadnot Point 602 project. 10 buildings on Hadnot Point identified as places where solvents were being used past and present. Confirmed sources of TCE included base Maintenance (HP1202), graphics shop and Maintenance shop (HP 1601 &1502 areas), motor pool degreasing rack, HP-901, HP 902. Land disposal of waste POL was also verified.
3. Well HP 645 was shut down on 13 Jan 87 due to benzene contamination. Well AS-106 was shutdown due to DCE contamination on the same day.
4. EPA will have oversight at NPL sites. Per DOD (Department of Defense)/EPA memorandum of understanding of 1983, the DOD will finance and conduct response while the EPA will provide technical assistance for installations that fall under CERCLA.

February 5 1987 – MCON Project P-853 proposed to relocate Hadnot Point's outdated and leaking fuel farm. **(CLW 1737).** The actual project brief is not available to the public.

March 1 1987 – This was the "official" date given to ATSDR as to when the Holcomb Blvd expansion was completed and the Tarawa Terrace water distribution system was taken off line. However, this is in contradiction to document **CLW 4993.** In this document, Elizabeth Betz advises that Holcomb Blvd Water expansion was completed and the plant began test operating. Tarawa Terrace and Camp Johnson were not utilized during test periods when Holcomb was online. Holcomb Blvd expansion was officially accepted on 01 April1988 and at that point Camp Johnson and Tarawa Terrace WTPs were closed.

It is important to note that in accordance with BUMEDINST 6240.3, Department of the Navy and United States Marine Corps officials were knowingly poisoning their own people during the period of 30 October 1980 - 1 April 1988. Prior to 30 October 1980 this same directive had pre-emptive requirements that if had they been followed, would have eliminated most of the human exposures that occurred after 1963.

- **March 31 1987 –** Phone call between Base Environmental Engineer Robert Alexander and Cheryl Barnett at NavFacEngCom. Ms. Barnett advises Mr. Alexander that the EPA Region IV recommended MCBCL be added to the National Priority List per Surperfund Act. **(Cercla 198).** Mr. Alexander the observes the following:
    1. EPA will increase oversight of NACIP methods, reports and reviews.
    2. The base must prepare a Community Relations Plan.

April 05 1987 – Memorandum for the Commanding General concerning Real Property License Agreement with UNC-Chapel Hill. The purpose of the agreement was to facilitate the University's multi year study of the Tarawa Terrace Exchange Service Station gasoline contamination. The study was funded by the EPA. **(Cercla 196).**

- **April 16 1987 –** Briefing aboard Camp Lejeune concerning USGS Phase one results. Attendees include Robert Alexander, Carl Baker, Al Austin, Mack Frazelle and Lt Col. Kiriacopoulos. There are no known public records detailing the specifics of this meeting. **(CLW 1998).**

May 7 1987 – Letter from USGS to AC/S Facilities, Col. Dalzell regarding results of Phase one of the USGS survey aboard MCBCL. The results of Phase one reveal that the water supply aquifer aboard MCBCL was readily recharged by precipitation and was a very dependable source of water. However, the aquifer was not well protected from potential surface contamination because clay layers above the water supply aquifer that might serve as a barrier are thin and discontinuous. Results suggest that with some relatively inexpensive modifications to future placement of supply wells could significantly improve well yields and reduce overall cost. **(Cercla 1998).**

- **May 27 1987 –** Site inspection report for ABC One Hour Cleaners performed by Cheryl A McMorris, Environmental Chemist State of North Carolina Solid and Hazardous Waste Management Branch. The author correctly identifies Tetrachloroethylene (PCE) as the material contaminating the ground water in and around ABC One Hour Dry Cleaner but through out the report she refers to the compound as TCE which is the name given to the sister chemical trichloroethylene. ABC was identified as using PCE in their operations since 1954. PCE was stored on site in a 250 gallon tank located in the rear of the property. Spent PCE captured in a filtration system was disposed on site in pot holes or other areas on the property. ABC was also on a septic tank soil absorption system that drained into the ground thus allowing the PCE to escape into the ground water. The State used the three community water wells (TT-25, 26 and new well) and 3 test wells to determine that ABC was the source of PCE in the water at Tarawa Terrace. An on site well at ABC tested 12,000 ppb PCE. The author of the report was unsure whether the presence of TCE, DEC and Vinyl chloride were related to the PCE. (These products are degradation products of PCE at the time this report was written, this was a known fact). The presence of toluene and benzene are explained as possible by products of PCE or natural background readings. **(CLW 1557).**

June 5 1987 –Letter to North Carolina Division of Environmental Management from J. R. Bailey of LantDiv. The letter advised the state that under CERCLA section 121, that the Navy's remedial action is required to attain legally applicable, relevant and appropriate standards, requirements, criteria or limitations known as ARARs. Mr. Bailey requested the state's input concerning ARARs in order to assist them in obtaining the level of cleanup desire. Mr. Bailey identified the contaminants of concern as benzene, vinyl chloride, PCE, TCE, 1,2 dichlorethane, 1,1-dichloroethene, and trans 1,2 dichloroethene. **(Cercla 318).**

July 8 1987 – EPA publishes final rule establishing maximum contaminant levels for PCE, TCE and selected other Volatile Organic Compounds. The new monitoring requirements for TCE and PCE become effective on January 1, 1988.

- **July 27 1987 –** Memorandum from Mack Frazelle (Utilities Systems General Foreman) to Director Utilities Branch regarding closed wells aboard MCBCL. Mr. Frazelle raises the question of what were the future plans with the contaminated wells. Mr. Frazelle feels that some of the wells can be possible restarted and others can be cannibalized for their equipment before they seize through lack of use. He requests that the memo be reviewed for consideration. **(CLW 4971).**

August 27 1987-- Letter Dr. Barry Johnson, Associate Administrator ATSDR to LTC. Warren Hull, DOD/EPA Liaison Officer. Dr. Johnson informed LTC. Hull, that in accordance to CERCLA section 104 (i) (6) (a) , the Agency for Toxic Substances and Disease Registry is required to conduct a health assessment for all sites on the National Priorities List including Federal Facilities. **(Cercla 437).**

- **Aug 28 1987 –** Memorandum from Utilities branch to Operations branch regarding TTHM readings. Mr. Baker advises that MCAS is now in compliance but when the MCL is lowered to 5 ppb, then MCAS will be out of compliance. Mr. Baker requests assistance from Operations in meeting this goal. **(CLW 1646).**

September 15 1987 – Letter from N.C. Dept of Human Resources to AC/S Facilities MCBCL. The state advises that the USEPA has changed rules for Safe Drinking Water Act and that 44 synthetic chemicals (including PCE, TCE, DCE and vinyl Chloride) will be monitored on a quarterly basis. **(CLW 5432).**

- **Sept 16 1987 –** Meeting with LantDiv and Environmental Science and Engineering inc. regarding Installation Restoration Program (new name for NACIP). Base Engineer Robert Alexander was the attendee from MCBCL. The purpose of the meeting was to review the IR program status, specifically to review the proposed remedial actions for the Hadnot Point groundwater problems and to examine data colleted to date on the remaining 22 IR sites aboard MCBCL. **(Cercla 261).**

1. 15 Volatile Organic Compounds have been identified in the shallow aquifer. Four of the most serious compounds violate recommended state and EPA standards.
2. Two large plumes have been identified in the shallow aquifer. The first includes a portion of the industrial area between building 1700 and Burger King (Holcomb Blvd to Louis Street). The second includes the area from the fuel farm on Ash St NW to Sneads Ferry road and from Holcomb Blvd to Louis Street.
3. Most significant issue to be determined was at what level the MCBCL needs to remediate the groundwater. Mr. Alexander advises that the state is in the process of revising their groundwater standards.
4. Deep well monitoring has identified Methol Ethyl Ketone (MEK a compound used for cleaning and stripping) in the deep aquifer. The presence of this compound in the deep well aquifer will compound the problem as treatment options for VOCs do not work to remediate MEK.
5. ESE described a tentative list of short and long term remedial options. However, these options will cause additional environmental emissions through one of three possible medias 1. Sewage treatment plant. 2. Air emissions **(note this option involves a known viable pathway for exposure.)** 3. Package VOC for hazardous waste disposal off base.
6. Mr. Alexander recommends that the pumps and equipment from the eight contaminated Hadnot Point supply wells be pulled and reused else where.
7. ESE was tasked to provide draft report in the next few months after the meeting. The state and EPA were to be provided a copy for their review. This was to be followed by a briefing. As for the other 22 IPR sites, nine were recommended for closure due to lack of documented evidence of contamination, six needed a risk analysis and seven were to require continued monitoring and development of a cleaning program.
8. Mr. Hubbel of CMC LFL recommends that MCBCL and LantDiv should work to release some of this information to the public in accordance with superfund amendments. Mr. Alexander adds that they will need to review this will JPAO and develop a cooperative effort in light of these rules and the possibility that Camp Lejeune sites could be named to the EPA NPL.

- **Sept 23 1987 –** Phone call memo for conversation between Cheryl Barnett of LantDiv and Robert Gregory of Environmental Science and Engineering (Confirmation Study Contractor). The conversation is concerning the ARARs proposed by the State of North Carolina. The state was requested to provide their input on June 5th by J.R. Bailey of LantDiv. Mr. Gregory advised that the 10 to the minus 6 levels are only used when exposure is by drinking contaminated water and/or eating contaminated organisms. He feels this is not applicable for Camp Lejeune. ESE feels that accepting ARARs will set a poor precedent for all future North Carolina work and is not in accordance with EPA guidelines. He advocated using MCLs (Maximum containment levels) for the Hadnot Point area. Cheryl Barnett agreed with this recommendation and received guidance that the state should be asked at the beginning for potential ARARs, but the Navy would select the actual ARARs during analysis. **(Cercla 413).**

October 28 1987 – EPA amends SDWA to include notification of consumers when certain violations of the National Primary Drinking Water Regulations or monitoring requirements occur. The use of lead pipe, solder and flux for installation or repair of any public water system is prohibited. The effective date of these changes will be 28 April 1989. **(CLW 1662).**

December 4 1987 – Memorandum from Base Maintenance Officer to Director NREAD concerning reclaiming closed wells. Mr. Baker requests that nine of the fifteen closed wells be re-sampled for VOCs in order to determine if any can be reclaimed. **(CLW 1671).**

January 27 1988 – Letter from the State of North Carolina Division of Human Resources to MCBCL regarding the Holcomb Blvd plant expansion. The state advises that they have reviewed the plans and records and have approved the plant's expansion for operation. **(CLW 1680).**

February 8 1988 – Letter from JAG to State of North Carolina Department of Justice Attorney General. JAG Col. Tokarz writes to inquire into potential actions to be taken by the State against ABC One Hour Cleaners. Col. Tokarz also places the State on notice that the Marine Corps may wish to purse their clean up cost for Tarawa Terrace as well. **(CLW 1716).**

- **Feb 25 1988 –** Article in base newspaper *The Globe* featuring Assistant Chief of Staff Facilities, Colonel Thomas Dalzell. The article was written for base personnel and explained the contamination problem aboard Camp Lejeune and why the base was to be listed on the National Priority List. During the interview, Colonel Dalzell stated that prior to 1983 "we were not aware of these particular compounds that might have been in the ground water and we have no information that anyone's health was in any danger at that time." The Colonel went on to identify the source of the groundwater contamination as the motor pools that existed in Hadnot Point. He stated that "at that time oils, greases, solvents, gasoline, cleaning fluids, and other types of chemical compounds that were used in our everyday processes were just being dumped in the ground or dumped in sewers or things like that; and we really were not aware back in the 60's and 70's of the effects of ground water contamination." **(Cerlca 132 pp 28 & 29)**
- **Feb 29 1988 –** Letter from North Carolina Division of Health Services to MCBCL regarding lead notification required by amendment to the Safe Water Drinking Act. The letter advises that unless a water system owner can provide documentation that the pipe or pipe fittings of any given system is less than eight percent of the entire system or plumbing in any home connection is less than 0.2% lead, then public notification of lead was to be given to all consumers on the system. **(CLW 1690).**

March 15 1988 – Action brief from Utilities Branch concerning clarification of Environmental responsibility aboard MCBCL. Utilities Branch Director (C. Baker) writes the brief out of concern arising from out of concern over who or what department on base is in charge of environmental affairs, Who represents the base to governmental authorities and conflicting priorities among the various departments on the base itself. This confusion and lack of organization has led to numerous environmental related problems aboard MCBCL. The problems involved permit violations, operation of utilities plants, monitoring of waste treatment plant discharges, maintenance and repair of facilities, and the expansion of utilities. **(CLW 1696).**

- **Mar 18 1988 --** Message from Col Lilley concerning action brief 15 Mar 1988. Col Lilley requests a meeting to discuss Mr. Baker's action brief and agrees there should be a clear division of responsibilities among the area of the base regarding environmental concerns**. (CLW 1699).**
- **Mar 23 1988 –** The Assistant Chief of Staff Facilities notified the Commanding General of the situation concerning the leaking fuel farm. He is advised that a MILCON project is scheduled in the out-years for replacement of the leaking UST's with a possibility that replacement could be moved up to a near year. **(Cercla 96).**
- **Mar 29 1988 –** Letter from Staff Judge Advocate, A. P. Tokarz, MCBCL to Assistant Chief of Staff Facilities MCBCL. The letter is in reference to the leaking underground storage tanks (USTs) at the Hadnot Point fuel farm. **(Cercla 96).** See pp 33-34 of the document.

1. Base Environmental Engineer, Robert Alexander, advised, at a workshop held prior to the letter, the USTs at Hadnot Point were in such a deteriorated stated that they continue to leak at a rate of approximately 1,500 gallons per month.
2. Mr. Alexander advised the Staff lawyer on 25 March that the base planned to address the problem by installing more monitoring wells to identify the plume, design recovery wells, receive bids to construct a recovery system, determine the disposition of the recovered fuel and then award a contract.

3. Mr. Tokarz recommended that pressure be applied to HQMC to move up the replacement of these leaking USTs to the immediate future. He stated that the loss of 1,500 gallons per month will be difficult for taxpayers to understand, and the extremely high cost of recovering that lost fuel exacerbated the problem. He also advised that the value of recovered fuel would be diminished due to the presence of other contaminants in that area.
4. Mr. Tokarz also pointed out that a delay in replacing the tanks will result in an indefensible waste of money, and a continuing potential threat to human health and the environment. He felt that formally applying to HQMC for expedited action would assist in demonstrating to the public and the residents of Camp Lejeune that the Command took swift, reasonable action.
5. A recommendation was made to notify the state of North Carolina Department of Environmental Management. Mr. Tokarz advised that a crucial objective in the NPL process was for the base to establish credibility with the state and the public.

April 1 1988 -- Elizabeth Betz advises that Holcomb Blvd Water expansion was completed in 1987 and the plant began test operating. Tarawa Terrace and Camp Johnson were not utilized during test periods. Holcomb Blvd expansion was officially accepted on 01 April1988 and at that point Camp Johnson and Tarawa Terrace WTPs were closed. **(CLW 4993).**

- **April 4 1988 –** Action Brief concerning Lead notification. AC/S Facilities, Col. Dalzell recommends that Lead notification be published in the Globe magazine once a month for three consecutive months to fulfill requirements of public law. **(CLW 1700).** The notification proposal was approved for publication by Col Dalzell. **(CLW 1711).**
- **April 14 1988 –** Letter from J.R. Bailey to Nancy Redgate (EPA SF Program) concerning Preliminary Assessments for facilities listed on the Hazardous Waste Compliance Docket. MCAS New River is one of these facilities. Mr. Bailey advises that MCBCL is not on the docket but that the facility has already been scored and will be proposed for the NPL shortly. **(Cercla 284).**
- **April 21 1988 –** Memorandum from Col. Dalzell to Director NREAD. Col Dalzell requests that testing contract for water be modified to include lead and other heavy metals. **(CLW 1707).**
- **April 22 1988 –** Letter from AC/S Facilities, Col. Dalzell to Ms. Perez (Techlaw Inc) concerning follow up on a phone conversation on ABC One Hour Cleaners. Col. Dalzell writes to inquire on what actions are being taken against ABC for the Tarawa Terrace contamination. **(CLW 1712).**

May 4 1988 – ESE Feasibility Study for the Hadnot Point Industrial Area.The purpose of the report was to provide a database and information from which the Navy/USMC based their decisions to develop remedial alternatives to clean up the detected contamination at the HPIA. The report determined that the contamination at the HPIA resulted from improper waste disposal, POL disposal, underground storage tank leaks, solvent spills and sludge disposal. A Risk Assessment study was not performed for the HPIA at the time of the ESE FS report. Instead five interim alternatives were proposed to reduce immediate health risks in the HPIA Feasibility Study area.

1. Drinking Water Well Assessment.
2. Ambient Air Monitoring.
3. Underground Work Space Monitoring.
4. Continued Groundwater Monitoring.
5. Cessation of Conitnuing Sources of Contamination.

Ambient Air Monitoring was recommended for the interiors of buildings near “hot spots” of contaminated groundwater or places where the soil and gas readings were high. The contractor recommended a HNU photoionizer, an organic vapor analyzer be used to monitor air quality fot Benzene, toluene, xylene (at the fuel farm) and TCE, DCE, and vinyl chloride (areas south of the fuel farm). ESE advised that in the event these compounds were detected above the threshold limit value (TLV) to humans, immediate measures such as forced ventilation should be taken until permanent remediation measures were found. **(Cerlca 428).**

- **May 11 1988 –** ESE Confirmation Study Characterization Step Report for Hadnot Point Industrial Area. **(Cercla 258 & Cercla 48)** Summary of findings:

1. Buildings 901,902,903,1202,1502, and 1601 appear to be the sources for the three contaminated areas at the Hadnot Point Industrial Area.
2. Building 1100 was identified as former service station which conducted limited maintenance. During the time of the NACIP study it was used as a printing plant. A 55 gallon drum of PCE was observed outside the building. ESE was informed that the drum developed a leak and was allowed to leak onto the ground. ESE recommended further monitoring of this area and the installation of a monitoring well.
3. Soil and Gas investigation confirmed the presence of TCE at these three sites and in limited quantities at several other sites.
4. The potable water obtained for MCBCL is derived from a sand/limestone interval which is highly permeable. Groundwater flow was generally towards the New River. The flow into the deep aquifer zone could not be definitively established by the current data due to a scarcity of sampling points.
5. Two contaminated plumes of VOCs and petroleum hydrocarbons were found to exist. The northern plume consists of 2 sources of contamination centered around building 901 (maintenance shop) and the Hadnot Point Fuel Tank Farm. The data suggests that these two plumes have coalesced into one large plume of contamination. The southern plume was centered around the maintenance facility associated with buildings 1601 and 1709. Voc contamination of the deep aquifer has not been established but is assumed to have occurred due to the presence of contaminated supply wells adjacent to the Hadnot Point Industrial Area.

- **May 13 1988 –** Letter from Commanding General MCBCL to Commandant Marine Corps regarding groundwater contamination at Tarawa Terrace. Information concerning details of the contamination forwarded to HQMC. **(CLW 1716).**
- **May 18 1988 –** Letter from AC/S Facilities, Col. Dalzell to Preston Howard (North Carolina Division of Environmental Management) regarding notice of release from underground fuel storage facilities at Hadnot Point fuel farm. Col. Dalzell informs the State that engineers have located and defined a plume emanating from MCBCL's fuel farm at Hadnot Point. He further advises that the Commanding General has order the farm closed and an interim fuel farm be established with all environmental precautions to prevent further contamination. **(CLW 1734).**
- **May 18 1988 –** Letter from Commanding General MCBCL to Commandant Marine Corps concerning documented groundwater contamination at Hadnot Point fuel farm. The General makes the request to expedite funding for the 05 Feb 87 MCON proposal to relocate the aging and leaking Hadnot Point fuel farm. The General confirms that gasoline derivatives and other volatile organic compounds have been found in the water supply aquifer and the deep water aquifer underneath the fuel farm. The General also advises that inventory records indicate a continued loss of fuel into the ground and that a "positive and swift action" will demonstrate their commitment to the environment to the various regulatory agencies overseeing MCBCL. **(CLW 1737).**
- **May 24 1988 –** Message from Commandant Marine Corps. HQMC advises all stations that they shall give notice in accordance with SDWA concerning lead in the drinking water systems. Notice shall be given in the form of newspaper articles and mailers in bills. **(CLW 1714).**

June 1988 – Camp Lejeune Military Reservation (Including MCAS New River) and ABC One Hour Cleaners are both proposed for listing on the EPA's National Priority List as a Superfund hazardous waste site under CERCLA. **(CLW 4976).**

1. Ground water at the base is shallow (10ft) and subsurface formations are permeable (conditions that facilitate movement of contaminants into ground water). An estimated 13,800 people obtain drinking water from wells within 3 miles from site # 21. The nearest well was 1,400 feet away.
2. VOC contamination in the shallow and deep water aquifer.

- **June 1988 –** MCAS New River Water Treatment study prepared by Hobbs, Upchurch and Associates. P.A. The study recommends the installation of an ammonia feed system to treat the water used for MCAS. The system will prevent the formation of TTHM and bring the air station within compliance of the proposed 0.05 ppb standard. **(CLW 6036).**

July 14 1988 – Letter from Commanding Officer MCBCL to Commanding Officer MCAS New River regarding water samples from Officer's club. Analysis indicated that bacteriological contamination existed in the club's drinking water. **(CLW 1784).**

- **July 15 1988 –** Letter from Commandant of the Marine Corps to all commands including Camp Lejeune regarding Installation Restoration requirements and procedures. The letter encourages full and open cooperation with regulatory agencies and the public in regards to clean up at past disposal sites. The Commandant also advised that as amended by the Superfund Amendments and Reauthorization Act, the USMC was required to comply with CERCLA just as any non-governmental entity. Contained within the enclosure is an excerpt from CERCLA discussing document retention under CERCLA for 50 years. **(Cercla 577).**
- **July 18 1988** – The state advises that measures to be taken to disinfect the officer's club and that bottle water must be provided until the entire potable water system (MCAS) was completed. **(CLW 1787).**
- **July 29 1988** –MCAS officer's club was declared free of coli form bacteria. **(CLW 1791).**

August 1 1988 – Letter from the Commanding General Camp Lejeune to AC/S Facilities, CO, U.S. Naval Hospital and AC/S Manpower regarding Installation Program MCBCL Study. According to the May 1988 ESE Feasibility Study for the Hadnot Point Industrial Area, five interim alternatives to deal with immediate health risks in the Hadnot Point area were recommended by the contractor. One of the recommendations was for ambient air monitoring for buildings within the HPIA. This task was assigned to the Commanding Officer of the Naval Hospital Preventive Medicine Unit and AC/S Manpower Safety Officer. A written report of their findings was requested. **(Cercla 260)**.

- **Aug 3 1988 --** Letter to commanding General MCBCL concerning Installation Restoration Contract Report. The enclosed report indicates in section 3.5 **(CLW 6298).** ESE recommends the evaluation and discontinuation of practices at Hadnot Point Industrial Area (HPIA) which may result in contamination of the soil and groundwater. All current disposal practices should be evaluated for environmental contamination potential. Fuel tanks and underground tanks should be tested for leaks. **(CLW 6298 + CLW 6300).**

- **Aug 5 1988** – Memo to Utilities director Mr. Baker from Mr. Elston. Mr. Baker is advised that the supply wells will be tested for VOCs over the next three or four months and to hold off on and further action until that time. **(CLW 1793).**

Aug 9 1988 – Technical Review Committee held aboard Camp Lejeune. The committee is sanctioned by the 1986 Superfund Amendment Reauthorization Act from Congress. The purpose of the committee it to keep the community informed of actions occurring on a superfund site such as Camp Lejeune. **(Cercla 47).** The meetings were intended to encourage fluid discussion and to provide the Chairman with comments on studies and remedial action. The meeting was recorded and transcribed and entered into the base administrative record. DoN, EPA and state agency members were expected to serve as their agency's spokesperson and positions advanced by these members during the meetings are considered the corresponding agency's position. **(Cercla 489).**

1. Prior to 1986, the Department of Defense handled contamination sites at military installations under the Installation Restoration (IR) Program. The Navy version of this program was called NACIP. When the 1986 SARA was passed. DoD was required to bring their program in alignment with the EPA's program. According to Cheryl Barnett from LantDiv, The Initial Assessment Study was released in 1983 and it wasn't until the 1984 Confirmation Study that the drinking water contamination was discovered. (pdf 8&9)
2. The Hadnot Point Industrial Area site was created as a mechanism to attempt to explain and locate the TCE contamination in that area. (pdf11) The sources for TCE in the HPIA later turned out to be the vehicle and base maintenance buildings and building 1100 all located within the confines of the HPIA. There is no mention of the benzene contamination found in well HP-602 until later in the presentation (Pdf page 23) but he falls short of making the direct connection or naming the levels found in well HP-602. Also, Please note well HP-651 was located well away from the HPIA and

thus it could not be a source of contamination for that well. The source was discovered in 1992 and became known as site 82, VOC disposal area).

3. Site 22, The Hadnot Point Fuel Farm was identified as a source of fuel contamination in the groundwater. ESE's Robert Gregory asserted that the types of contamination they indentified there and at site 21 were in the deep wells and did not pose an immediate threat. (Pdf 15).
4. Mr Gregory later described a well located along the periphery of the HPIA which according to him triggered the whole investigation after VOCs, waste solvents and fuel derived materials were found. This well appears to be HP-602. Mr, Gregory then went on to state that he was not sure of the levels but that they may have 30 ppb. (Pdf 16).
5. Base Environmental Engineer, Bob Alexander, announced that the base was going to perform ambient air monitoring and that they were already purchasing equipment. The reasoning was to make sure there were not hot spots inside specific buildings where soil and gas surveys indicated potential problems. (Pdf 39).
6. Building 1100 was identified as a former service station but there was no mention of the 7 UST still located there. Only a drum of PCE was mentioned. (Pdf 25).
7. Mr. Bittner specifically asked Mr. Alexander what kinds of tests they were running in terms of water quality. Mr. Alexander replied that they had very little if any data before we realized our ground water was contaminated. (Pdf 44).
8. Near the end of the meeting, Victor Weeks of the EPA pointed out that deep aquifer had yet to be addressed. (Pdf 51).
9. Cheryl Barnett from LantDiv states "As part of that effort (Confirmation Study 1984), we sampled a lot of potable water wells here on Camp Lejeune, and we discovered some contamination in basically eight wells that were immediately closed by the base." Ms. Barnnett's statement fails to account to the Jennings, USAEHA and Grainger lab reports dating back to October 1980 which indicated that these chemicals were in the water 4 years before the base "immediately" closed the wells. (Pdf 8).
10. The current NACIP study only has three 75-150 foot monitoring wells and thus according to Mr. Alexander, "we don't have the data" to tell where the deep water is going or the extent of the contamination in the deep water aquifer.
11. An information repository was established at the Onslow County Library.
12. Possibilities for remediation were reviewed including air stripping and filtration of the VOCs.
13. Near the close of the meeting, Mr. Mader asked if about site 22 (HPFF). Mrs. Barnett advised that it was part of the 22 other sites they were looking at and that they just did not have any data to present today (on site 22). (Pdf 64).

- **Aug 25 1988 –** Letter from the State of North Carolina Department of Human Resources advises the Commanding General of MCBCL the base has been selected for the EPA's National Pesticide Survey of public drinking water wells. This means that the base's water systems will be tested for pesticides. The base was to be notified of the results before they were released to the public. **(CLW 1801).**
- **Aug 1988 –** Letter from Commanding Officer Naval Hospital to Commanding Officer MCBCL regarding IR Program Ambient Air Monitoring request in letter dated 1 Aug 1988. The CO of the Naval Hospital advised that they are unable to perform the required ambient air quality testing and recommend that the tests be contracted out to another party. **(Cerlca 260 pdf 8).**

September 14 1988 – Letter from Director NREAD to AC/S Facilities, MCBCL regarding testing supply wells for VOCs. Samples were taken from HP 642, HP 603 and the Hadnot Point WTP. Detection limits were set at 10 ppb for the test. The samples were taken 11 Aug and sent to JTC labs for testing. **(CLW 1807).**

- **Sept 22 1988 –** Letter from North Carolina Department of Natural Resources and Community Development to AC/S Facilities, MCBCL. The letter was written to advise MCBCL that North Carolina's Groundwater classifications and Standards (15 NCAC 2L) were being revised. The major revisions include the establishment of numerical standards for VOCs. **(CLW 1808).**

- **Sept 29 1988 –** Letter from EPA Chief Lucius (Site Investigation and Support Branch) to AC/S Facilities, Col. Dalzell concerning comments for Characterization Step Report from ESE. The EPA recognized MCBCL for their attempts to comply with CERCLA requirements before MCBCL was listed on the NPL (Formation of the TRC and development of a Community relations plan). The EPA provided comments concerning the upcoming remedial work at MCBCL. **(Cercla 262).**
    1. Air testing around the sewage plant to monitor for possible toxic air emissions.
    2. Air stripping was a proven technology and was highly effective at removing VOCs. A vapor recovery system should be installed to insure acceptable air emissions.
    3. Efforts to determine the extent, concentration, rate and direction of migration of contamination need to be expanded to include all 40 CFR Section 261 requirements.
    4. All solid waste management units needed to be investigated for releases.
    5. Contaminants with no current health effects criteria should be remediated using the Hazard Index for systemic toxicants.
    6. Generated sludge should be treated as hazardous and treated in accordance with RCRA.
    7. Lead removal in ground water needed to be addressed before discharges into streams and waterways.
    8. Biological treatment of benzene, methylene chloride, toluene and TCE were not recommended because of extremely slow rates of biodegradation.
    9. If biological treatments are used, then MCBCL will need to address vapor recovery in order to protect air quality.
    10. Any sewage discharge will need to be permitted in order to monitor for VOCs.
    11. Characterization of the Deep water has not been completed and will need to be addressed in order to comply with CERCLA.
    12. The Feasibility Study (ESE) read that the clean up for contaminated water in the deep aquifer will be developed separately after collecting additional data. However, the EPA notes no plan for collecting this data was presented.
    13. No information concerning the hydraulic functioning of the shallow aquifer was submitted to justify the use of 32 recovery wells slated for use to recover the shallow aquifer. This data was needed by the EPA to check the adequacy of the recovery work with their computer models.
    14. Five years was considered an unreasonably short time for clean up of the groundwater system contaminated with an large plume as existed at MCBCL. Thirty years was recommended as a more realistic time frame.
    15. The EPA requested a written response before the next TRC meeting scheduled for Jan/Feb 1989.
    16. The EPA recommended early negotiations with the Marine Corps to enter into an Interagency Agreement (IAG) to facilitate the clean up of Camp Lejeune.
    17. Camp must develop and submit a Health Risk Assessment to the EPA.

October 5 1988 – Letter from Commanding General MCBCL to NavFacEngCom regarding IR program Hadnot Point Industrial Area. The General requests NavFacEngCom to evaluate ESE's Feasibility Study for Hadnot Point and provide any recommended revisions. **(Cercla 260).**

Oct 5 1988 – Letter from base Staff Judge Advocate, Colonel Tokarz to Director, Joint Public Affairs Office Camp Lejeune regarding proposed fuel farm (press) release. In this letter the Colonel discussed and approved a proposed press release and Q&A sheet about the Hadnot Point Fuel Farm (HPFF). Draft forms of the press release and proposed Q&A sheet were also located in the original 595 page document along with an October 1988 newspaper clipping from the base newspaper, The Globe. Please note that the proposed Q&A sheet was redacted by Navy JAG under FOIA exemption #5 when they released the electronic version of their UST library. Colonel Tokarz closes the letter with a parenthetical paragraph which reads:

"(To avoid claims of misrepresentation, whether the fuel can be successfully separated from the solvents at Hadnot Point should be verified in terms of anticipated amount of fuel recovered.)" (Navy UST 1185 Pdf 185).

December 5 1988 – NAVMEDCOM Instruction 6240.1 Standards for Potable Water. This order **cancelled BUMED instruction 6240.3C**. The purpose of the new instruction remains the same, (to establish potable water standards

for the Navy and the Marine Corps). However, the language of the new instruction is significantly revised. **(NAVMEDCOMIST 6240.1)**

1. The definitions describing **Health Hazards** and **Pollution** are **removed.**
2. The language contained in the prior BUMED, "substances which may have a deleterious (harmful) physiological effect or for which the physiological effects are not known, shall not be introduced into the water system in a manner which would permit them to reach the consumer", was **removed**.
3. This revision replaces what was then a more advance and comprehensive potable water standard with a new standard which was in agreement with the current SDWA requirements in force at that time.

- **Dec 7 1988 –** Contaminated Ground Water Study Report for the Hadnot Point Fuel Farm. The report was prepared by O'Brien & Gere engineering for NavFacEngCom. **(Cercla 417).**
    1. Fuel losses of gasoline occurred predominantly through leaks in the transfer lines or valves resulting in the formation of 2 plumes.
    2. The geology of the area consists of primarily silty sand with occaisional discontinous clay layers. Note this means contaminants were not confined to the areas where there were originally spilled.
    3. Their studies indicated the presence of a **free phasing product** in the groundwater that ranged from **.24 feet to 15.34 feet in thickness**. Analysis of the ground water identified significant levels of dissolved petroleum compounds including **benzene, toluene, xylene and ethylbenzene.**
    4. The extent of the benzene plume was not fully defined and exceeded the EPA's maximum containment level of 5 parts per billion.
    5. Traces of other VOCs including tetrachloroethylene and trichloroethylene were detected at the Hadnot Point Fuel Farm.
    6. The engineers recommended review of past inventories to help identify which tanks were leaking, initiate a storage tank management program or systematic removal and replacement of all the underground tanks, remediation of soil and ground water underneath the tanks.

- **Dec 12 1988 –** Letter from Paul Rakowski Head, Environmental Programs Branch Utilities, Energy and Environmental Division (Navy) to Dr. Barry Johnson Agency for Toxic Disease Registry (ATSDR) regarding Health Assessment MCBCL. Mr. Rakowski makes the formal request per CERCLA law for ATSDR to perform a Public Health Assessment for MCBCL. He also requests a review and comment on the draft before it's release to the public. **(CLW 4989).**

- **Dec 28 1988 –** EPA letter from Site Investigation and Support Branch to AC/S Dalzell MCBCL. The letter advises the base that the EPA and The North Carolina Hazardous Waste Branch will conduct a RCRA Facility Assessment (RFA) at MCBCL in January of 1989. **(Cercla 265).** The purpose of this assessment is:
    1. Identify and gather information on Solid Waste Management Units.
    2. Make preliminary determinations regarding known or suspected releases of hazardous wastes or constituents from SWMUs.
    3. Make determinations of the need for further actions.
    4. co-ordinate RCRA and CERCLA activities and responsibilities.

January 09-23 1989 – Letters between Director NREAD to base AC/S Facilities, concerning drums of DDT discovered at lot 203. During an inspection with the EPA, 5 barrels of DDT were discovered buried at lot 203. **(Cercla 276, Cercla 277, Cercla 279, and Cercla 289).**

1. A former DRMO employee (Mr. Pallotti) was contacted and interviewed concerning the DDT disposed at Lot 203. Mr. Pallotti revealed that between 1963 and 1980 various wastes were disposed of at Lot 203. The wastes included solvents, PCB, used battery acid and waste oil. Mr. Pallotti also advised DDT was stored in a trailer at lot 203 (please see 20 Nov 79 item # 11 entry for **CLW 263**) but he was not aware that DDT was buried at lot 203.

2. Mr. Pallotti stated 4 former DRMO lot employees had died, at least one died of cancer. Mr. Pallotti himself would later die of cancer.
3. The decision was made to remediate the exposed 5 barrels and leave the rest undisturbed until the Installation Restoration Program completes their inspection and assessment of Lot 203 (I.R. site 6).
4. Julian Wooten recommends that Base Safety and PMU investigate BRMO lot 203 and provide recommendations relative to any immediate threat to human health.

February 07 1989 – Letter to Commanding General MCBCL from AC/S Facilities, Col. Dalzell concerning Site Survey Report on Lot 203 by Base Environmental Engineer Robert Alexander. Col. Dalzell reports to the Commanding General that there is a presence of organic vapors at lot 203 and potentially affecting personnel at the site. A hand written note at the bottom of the page that personnel working at the lot have been removed. Mr. Alexander's attached report indicated that there was no imminent hazard and that normal operations of lot 203 should continue pending additional monitoring under the Installation Restoration Program. Mr. Alexander also recommended that activities should be conducted to minimize subsurface excavations around lot 203 and a 30 foot section of test area 4 be fenced pending further investigation. **(Cercla 306).**

March 20 1989 – Response to letter from NREAD to AC/S Facilities, Col. Dalzell concerning Cleanup of Lot 203. Col. Dalzell advises Julian Wooten to proceed with emergency contract to locate and hire firm capable of cleaning up the barrels at Lot 203. **(Cercla 303).**

- **March 21 1989 –** Letter to AC/S Facilities, Col. Dalzell concerning lot 203 soil samples. Per direction of the EPA, the soil samples from lot 203 were sent to the OSHA lab in Utah. Upon receipt of the samples, The OSHA lab advised that they would not be able to perform the analysis. The samples were then sent to an environmental lab for testing. **(Cercla 287).**

April 11 1989 – Letter from Supervisory Chemist Elizabeth Betz to Director NREAD concerning water monitoring as related to the Installation Restoration Program. Ms. Betz advises that she feels monitoring of all wells on base was very important and resists the idea of only sampling the wells nearest IR sites. Ms. Betz recalls how well HP-651 was well outside known contamination sites and that it would not have been discovered if they had not sampled all of the best wells in 1985. She also advises that well HP-651 was the worst of the contaminated wells on the base. She also recommends that wells 603 and 642 be sampled quarterly as they are near possible contamination. Finally Ms. Betz states that monitoring for Synthetic Organic Chemicals be completed quarterly until approved by the state. **(CLW 1818).**

May 10 1989 -- Letter from N.C. Department of Human Resources Division of Health Services to AC/S Facilities, MCBCL regarding SOC monitoring for Courthouse Bay WTP. The State advises MCBCL that the required SOC reports have not been filed and that per state regulation a notification must go out to users of the system advising them that MCBCL has not performed the required test. The State also reminds MCBCL that it was their (the base) own responsibility to provide test results within the required time frame. **(CLW 1824).**

- May 17 1989 – Letter from Commanding Officer to Commanding General MCBCL concerning Lot 203 test results. Mr. Wood advises MCBCL that preliminary soil test performed on the February samples indicates the presence of Lead, Chromium and Mercury. The organic analysis was not performed. A review of current lot 203 employee medical records revealed no abnormalities to date. Mr. Wood also recommends another round of testing be completed and that the base review safety procedures for employees of the lot. **(Cercla 288).**

June 20 1989 –Health Advisory Trichloroethylene (TCE) from EPA. TCE is now cited as a probable human carcinogen. **(CLW 1830).**

July 28 1989 – USEPA sends letter to MCBCL concerning recent inspection of the base and notification of violation of North Carolina's Hazardous Waste Management Rules. The base was found to be in violation of the following rules **(Cercla 246)**.

1. A generator of hazardous waste shall not accumulate hazardous waste on site for more than 90 days in an area that is not permitted or have interim status for storage.
2. A generator of hazardous waste shall not accumulate hazardous waste on site for more than 90 days must inspect areas where containers are stored at least weekly. The inspection log will kept for 3 years. Upon inspection, there were missing weekly logs at building 1775.
3. Hazardous wastes were found to be stored in areas not permitted.
4. Lack of training materials for personnel handling wastes.
5. Various incidents of improper labeling, mixing of types of waste and failure to secure lids.

- **July 20 1989** – Newspaper article advising the SOC analysis run for Courthouse Bay, Rifle Range and Onslow Beach were run in March 1989. **(CLW 1853).**

August 9 1989 – Letter from the Commanding General MCBCL to Commandant of the Marine Corps. Concerning Construction Contract 89-B-2611 Temporary Fuel Farm (Hadnot Point). The purpose of the letter was to provide HQMC with the background data used to justify the funding of the temporary fuel farm with M2 funds. **(Cercla 96).** See page 1.

1. The fuel farm was originally constructed in 1943 and consisted of 17 tanks ranging from 3,000 to 600,000 gallons.
2. Study (O'Brien & Gere) indicate that significant amounts of free fuel are located under the fuel farm.
3. Several potable water wells in the fuel farm area were shut down due to the detection of benzene and other chemicals in the water.
4. HQMC project LE201M and LE433R were undertaken in the early 1980's but during the design of the project, it was discovered that the cost to replace valves necessary to isolate tanks and allow leakage testing was not economically feasible due to the age of the tanks (40 years) and a decision was made that the fuel farm was beyond its expected life. A MILCON project was submitted to replace the fuel farm.
5. Upon the receipt of the O'Brien & Gere study, the State of North Carolina was notified of the leaks and the fuel farm would be immediately shut down. Notification of the release of fuel products was sent to the State of North Carolina May 18, 1988. The fuel farm remained in operation as noted in the next entry.
6. Despite the May 1988 notification the fuel farm remained in operation.

Aug 31 1989 – *Globe* news Article "Base Taps into Drinking Water Concerns" the article provides the Marine Corps viewpoint on the events leading up to and just after the contamination aboard MCBCL was "officially" discovered. **(CLW 1854).**

1. Contamination was found and verified at 15 cites. B.W Elston (Dep. Asst. C/S Facilities) stated, "Even then, none of the contamination found was above the limit described as acceptable by the EPA."
2. Mr. Elston also stated, "We closed eight wells in the Hadnot Point Industrial Area and two in Tarawa Terrace area as a precautionary measure and still had adequate water supply."
3. Supervisory Chemist Elizabeth Betz stated, "We shut down some wells that were not near the EPA limit."
4. Betz was also quoted, "You'd have to look at each VOC individually, but many of them are carcinogens. That's the main reason we immediately shut the wells down, although the levels we found in the tests were not near the EPA limit."
5. The contamination was caused by long-term spillage and dumping in the Hadnot Point Industrial Area. Most of the chemicals found were solvents used to clean vehicles.
6. Betz commented in Tarawa Terrace "We were puzzled when that chemical showed up. At first we couldn't figure out how it had gotten into Tarawa Terrace's system. Then we looked across Highway 24. There was dry cleaning business right across the road from the housing area." **(Note, please see BUMED 6240.3B and BUMED 6240.3C).**
7. The article states that base officials took immediate action to pump safe drinking water into Tarawa Terrace. No mention is made of the March 1985 action brief and the use of contaminated TT-New well during the 5 month interim to install the auxiliary pipe line to Tarawa Terrace.
8. Betz also stated, "Once you have identified where the potential for a threat is, you start taking action to correct it. You can't leave a contaminant in the ground water."

September 7 1989 – *Globe* follow up article. "Efforts Underway to ensure safe drinking water." The article is the second part of a three part series written by the Marine Corps to explain the contamination and clean up of MCBCL. **(CLW 1856).**

1. The Marine Corps, Department of the Navy and the EPA will work to coordinate how all parties will approach the clean up aboard MCBCL.
2. Closing of the Hadnot Point fuel farm was pending funding. According to Elston, "We are awaiting urgent construction funds from HQMC to build a new facility."
3. Betz advises that the base water supply systems currently meets all Federal standards and recent tests have shown no contaminants in the water system.

- **Sep 14 1989 –** Marine Corps *Globe* article: "Measures taken to prevent future water contamination. This is the last in a three part article explaining the contamination and clean up at Camp Lejeune. **(CLW 1859).**

1. Mr. Elston, "Most of the problems we are dealing with stem from years ago, when solvents and fuels were used all over the place and routinely dumped. Over the years, it built up."
2. Mr. Elston states, "Violations are reported promptly and corrected immediately."
3. According to the article, the base's dedication goes beyond mere inspections. 'The base recently sponsored a week-long training program for Marines involved with the handling, storage of hazardous materials and wastes and included briefings about state and federal regulations and procedures."
4. The base is awaiting listing on the NPL for additional funding for clean up.
5. Betz states, "The best way to avoid future contamination is to have good housekeeping in maintenance areas. If someone is sloppy, it will get into the system."
6. Finally, Mr. Elston ends the article with the following quote, "We always take measures to go at least a step beyond what is required by law and to ensure we don't provide water that is unsafe for those using it. The Commanding General will accept nothing less."

October 1 1989 – Work Plan for Product Recovery System Design Hadnot Point Fuel Farm at Camp Lejeune, Contract No. N62470-88-R-5255, prepared by O'Brien & Gere for NavFacEngCom. The purpose of the report was to provide a basis for the recovery system for the fuel farm at Hadnot Point. **(Cercla 381).**

1. The fuel farm was constructed in 1941 and was comprised of 15 fuel storage tanks (795,000 gallons of fuel capacity).
2. The natural drainage area is towards Wallace Creek (note, this is in the direction of well HP-602 but not cited in the report).
3. Their studies indicated the presence of free phasing product in the groundwater that ranged from .24 feet to 15.34 feet in thickness. (see page 10 of the report).
4. Two large plumes (pools) of product were identified.

October 4 1989 – Marine Corps Base Camp Lejeune and Marine Corps Airs Station New River are place on the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priority List as Camp Lejeune Military Reservation. **(CLW 4976).**

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