April 1, 2004

DIVISION OF REMEDIATION

Annual Report—2003

Featured Article:
Smith Junkyard, Meddybemps

May-September 2003

In 2003, the remedial actions at Smith's Junkyard in Meddybemps and Cooper continued with the removal of thousands of compressed gas cylinders. During the remedial action in 2001-2002, Maine Department of Environmental Protection (MEDEP) staff noted thousands of compressed gas cylinders strewn about the 4 sites that comprise the

Cylinders were often found hidden under or behind other debris and waste.

Smith's Junkyard site. Many of the cylinders had unknown contents and were in poor condition. In February 2003, the MEDEP entered into a Consent Decree with the Department of Justice in which they (DOJ) agreed to reimburse the MEDEP for the cost of disposal of the cylinders at the site.

The Jacques Whitford Company of Portland, partnering with Integrated Environmental Services (IES), an Atlanta based company that specializes in

Cylinders staged on site, awaiting sorting, treatment or disposal.

disposal of compressed gas cylinders, was awarded a contract to stage, inventory, treat and/or dispose and decommission the cylinders located onsite.

In May 2003 when staff arrived onsite to begin the removal action they discovered that the Smiths

One of many buried cylinder piles found on site.

had sheared hundreds of cylinders in half. Many of these were acetylene cylinders, which contain asbestos and acetone, adding another dimension to the removal action.

Industrial Services of Brewer, an environmental cleanup contractor, joined

Technicians process a chlorine cylinder.

the project in early June to remove the asbestos contaminated soil. Finding the cylinders required the contractor to sift through all of the junk piles located on the 50 acre junkyard as well as empty the contents of approximately 300 box trailers and railroad boxcars. During this process additional chemical and petroleum wastes were discovered. IES staged the waste products as they found them and MEDEP hired Environmental

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From the Director...

The clean-up of waste and petroleum sites is often expensive and time consuming work. Consequently, searching for innovative and cost effective solutions is an important part of our work. Innovative removals and clean-up actions are on-going at federal Superfund sites like steam injection into bedrock at Loring Air Force Base, low-temperature, thermal desorption of chlorobenzene from soil at Eastland Woolen Mill in Corinna, and injection of chemicals to treat contaminated ground water at Eastern Surplus in Meddybemps. State Site clean-ups have used innovative remedies like a bioreactor to treat contaminated ground water at Fayscott in Dexter, "soilcrete", a process that solidified oil sludges using fly ash and portland cement at the Portland Bangor Waste Oil Site in Wells and shallow micro-well vapor extraction pump and treat system in Jay to protect and clean-up ground water cost-effectively. Emergency removal of hazardous materials at sites in Meddybemps, Warren, Bangor, and Houlton protected the public from immediate health threats.

"Our mission is to protect public health, safety, and the environment from threats posed by hazardous substance sites."

Cylinders and containers of liquid wastes found at Smith's Junkyard, Meddybemps.

A defunct dry-cleaning facility, City of Bangor

Since its inception in 1993, the Voluntary Remediation Action Plan (VRAP) program has examined over 350 sites for cleanup and reuse. A total of 45 VRAP applications were received this year and 30 were completed. Staff conducted 3 site assessment reports for EPA this year including Brownfield Site Assessments.

Product pipe replacement, New Sweden

This year we made payments for remediation work completed in 2003 as part of the Municipal Landfill Closure and Remediation Program. Extensive remedial investigations and work were required at the Wells 9B landfill and new wells were needed at the Woolwich Landfill. Twelve additional landfills were certified as closed this year totaling 388 of the 414 municipal landfills. Of the remaining 26 municipal landfills, 11 are inactive, and 15 are licensed and active for a closure rate of over 97%. In addition, 119 landfills received "post closure" inspections this year to monitor how well the closures are being maintained.

Radiation source found at Smith's Junkyard, Meddybemps

More than 79 long term petroleum sites were successfully closed out this year. Staff are currently managing the clean-up of 58 of the highest priority sites from our Petroleum Priority List. We also replaced water supplies at 35 sites and completed the construction of public water supplies in 3 locations.

The Division's Annual Reports, Site Lists, and the Soil Cleanup Guidelines are available on the Division's Web Pages. These documents and our Risk Assessment Guidance for Hazardous Substance Sites are also available by mail. Call, write, or e-mail if you have questions about any of our sites. We look forward to another challenging and successful year.

— Mark Hyland

Cylinders staged for analysis with mobile laboratory at Smith's Junkyard, Meddybemps.

Site Assessment and Support Services Unit

During 2003, the Site Assessment & Support Services Unit resolved 30 sites through the Voluntary Response Action Program (VRAP); prepared 3 EPA assessment reports; conducted 10 Environmental Hazard Assessments for the Land for Maine's Future Program; managed 94 sites, which included 60 VRAP sites and 9 federal and state Brownfields sites; coordinated with USEPA's Office of Emergency Response to perform investigations and remediation at 5 sites; and, provided support/field services to project management staff at 35 sites.

— Nick Hodgkins, Unit Leader

The Site Assessment & Support Services Unit oversaw a number of activities at sites during the 2003, including the major removal project at Harry Smith's Junkyard in Meddybemps (see lead story). Here are a few other site highlights from 2003:

Iva Adams Property, Monticello

The Iva Adams Property, located off the McCluskey Road in Monticello, was the site of an abandoned sodium arsenate manufacturing facility which operated in the 1940s. The facility itself was a small three story barn-like structure located in the middle of a very large potato field. The facility apparently only operated a few years and later was used as a storage barn for drums and containers of materials used by potato growers. In the early 1990s, the barn was destroyed by fire and all that remained were the charred remnants of the building foundation and a large number of rusted/charred drums and other containers.

Following an initial investigation of the site area, MEDEP determined that a removal action should be performed at this site in two phases. The first phase consisted of the removal of all the container carcasses. Once the container carcasses were removed, approximately 100 tons of arsenic contaminated soil was excavated during the second phase. This soil will be disposed of in early 2004 at the Stablex facility in Canada, a hazardous-waste disposal facility.

The excavation has been backfilled with clean dirt. In addition, the site was surveyed and institutional controls for land use were put on the deed to address residual contamination.

Marine Trades Center, Eastport

The Marine Trades Center Site is the current location of the Washington County Technical Colleges' Eastport Campus. It had previously been the location of a pearl essence manufacturer. During the 1990s it was discovered that the water supply wells for the Campus were contaminated by chemicals associated with the pearl essence process.

In 1996 the Department funded the installation of a water filtration system to provide potable water to the school. During the next several years the Department conducted a series of investigations to determine the extent of contamination.

In 2000 the Department coordinated with USEPA's Office of Emergency Response the removal of 798 tons of 1,2-dichloroethane contaminated soil. In 2002 the City, through funding provided by the Department, extended a water line approximately ½ mile to the school as a permanent potable water supply.

Pierson Lane Apartments, Biddeford

The Pierson Lane Apartments site in Biddeford was the location of a former manufactured gas plant (MGP) facility.

During late 2002 and early 2003, site assessments conducted for refinancing and a real-estate transaction discovered MGP wastes in a brick coal-gas tank beneath the courtyard area located between the apartment buildings. In order to remove the MGP wastes from this tank (which was 60 feet in diameter), the residents needed to be temporarily relocated. During the expedited time period of mid-March to mid-May, 8,776 tons of contaminated soil was removed and taken to a facility in New Hampshire for recycling. During the removal action, the hole reached as deep as 30 feet below the original ground surface.

Once the removal action was completed, the courtyard was restored and the residents were allowed to move back into their apartments.

Before implementing remedial actions.

During remedial actions.

After remedial actions and restoration were complete

Federal Facilities and Superfund Unit

Sites assigned to the Federal Facilities and Superfund Unit often pose complex challenges. The site may cover a large area and include sensitive environments such as freshwater or marine sediments; the volume of contaminated media may be very large; or the contamination may be difficult to assess and treat. It is often a multi-year process to select, construct, and evaluate the remedy. In many cases, Division staff can't just walk away after the active treatment is over, but must return to check that engineered and legal remedies perform as intended. In 2003, these activities included:

Portsmouth Naval Shipyard (PNSY), Kittery *(Iver McLeod)*

Significant progress on the hazardous waste landfill cover for the 25-acre Portsmouth Naval Shipyard Jamaica Island Landfill (JILF) occurred in 2003. This is a multiple layer cover designed to prevent receptors on the surface from coming in contact with contaminated soil and/or waste and will minimize infiltration of precipitation/snow melt through the cover to the landfill material. The photos below show some of the steps in building the cap in chronological order: construction of the gas management and low permeability soil layer, followed by the installation of the geomembrane, and finally, placement of select fill. Construction of the cap is scheduled to be completed in 2005.

Gas management & low permeability soil layers

LLDPE Geomembrane installation

Installation of select fill

Eastland Woolen Mill, Corinna

In 2003, following an evaluation of the Low Temperature Thermal Treatment (LTTT) technology pilot study data, full-scale treatment of the remaining estimated 75,000 tons of stockpiled contaminated soils was implemented at the Site. The existing LTTT treatment units were revamped and additional units constructed for a total of four treatment units, each consisting of two treatment beds. The LTTT of the stockpiled contaminated soils was completed in October 2003, ahead of schedule. As a result, activities for the destruction and removal of the former mill's concrete slab were implemented. In addition, on-site backfilling of the treated soils and regrading of the Site area began. Site activities were halted in December of 2003 and the Site was shut down and buttoned up for the winter season.

Treatment area, Sept 17, 2003

Concrete slab removal, Nov 3, 2004

EPA has spent almost $42 million on the Non-Time Critical Removal Action (short-term cleanup). The total cost approaches $57 million. The long term cleanup of ground water has not yet begun.

— *Becky Hewett*

Former Loring Air Force Base, Limestone

The Department has received the data from the Pilot Project using Steam Enhanced Remediation at the former Loring Air Force Base Quarry Site. This demonstration was the first time that steam injection technology was used at a contaminated site composed entirely of fractured bedrock.

Before the pilot test began in 2002, data from rock cores, borehole geophysics and rock chip samples were evaluated in order to characterize the

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The steam injection system in operation in 2002.

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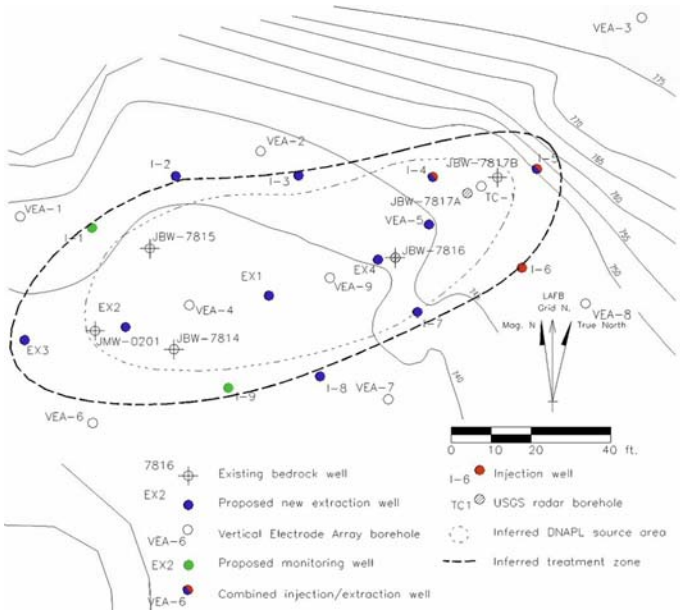
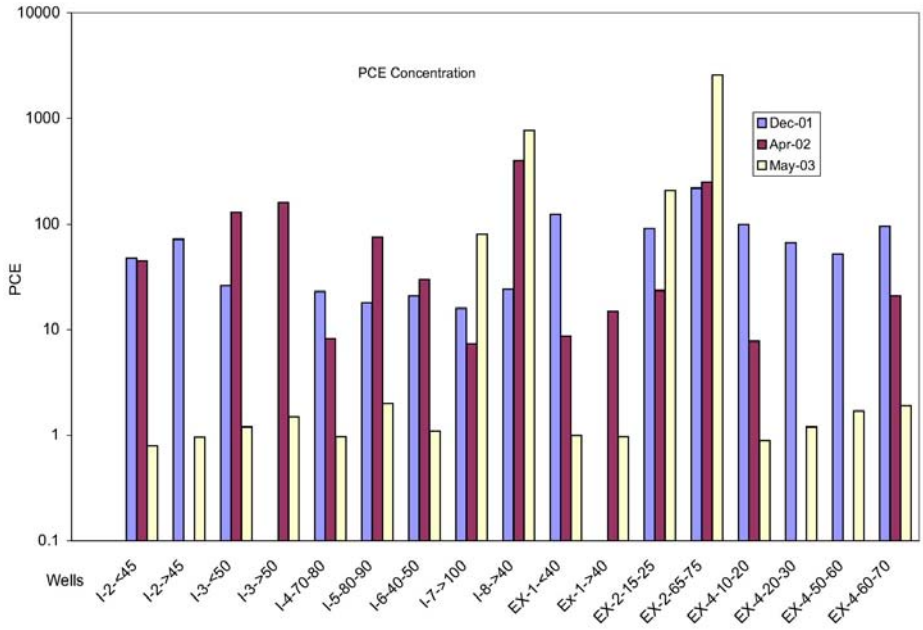
fracture system and contaminant distribution. The transmissibility of the fractured rock was determined in 10-foot intervals using packers to isolate the intervals. Major inter-connections between boreholes were characterized. Three boreholes on the eastern part of the site were designated as steam injection points, and boreholes in the central and western portions of the site were chosen for extraction of groundwater and vapors. Three deep wells were used to evaluate potential downward migration of contaminants. After initial evaluation of system performance, some of the extraction wells were converted to injection wells after the Pilot Project had run for 30 days. Injection continued for a total of 83 days with extraction throughout that period and continuing for one week after injection was halted.

Results of the effluent water and vapor samples show an initial decrease in the level of contaminants in recovered water; levels increased by an order of magnitude after approximately 3 weeks of steam injection. Results for the recovered vapor were similar to the recovered water. *— Naji Akladiss*



This figure illustrates the general approach of surrounding the contaminant zone with steam injection wells in order to push the contaminants into centrally located extraction wells. The intent was to displace non-aqueous phase liquid and to vaporize residual contaminants as they were heated.



This chart shows the results for perchloroethylene (PCE) in 17 groundwater wells for dates prior to and after steam injection.

TLC for Closed Sites

The pages of the Annual Report chronicle the motion of many tons of soil and wastes. Contaminants get hauled away or tucked under protective covers in order to put the remedy in place. The ultimate goal of the Division of Remediation is getting sites into the less glamorous but no less important phase known as "Long Term Operations and Maintenance". At Saco Municipal Landfill, O'Connor Junkyard in Augusta and the Former Defense Fuel Supply Point in Harpswell, the Federal Facilities and Superfund Unit inspected the sites, looking for items needing repair, made sure groundwater and streams were sampled for contaminants and interpreted the lab results. We are pleased to report that the cover systems at Augusta and Saco are functioning as intended and contamination in ground water has not spread beyond site boundaries as of December 2003.

Aerial photo of Harpswell Fuel Depot—circa 1990
Photo courtesy of Fairwinds Partnership

At a cost of over $7 million, the site was transformed from a fuel farm into a meadow.

— Wilkes Harper

Landfill Closure and Remediation Program

Municipal Landfill Remediation Highlights

Landfill Inspections

A total of 119 landfill sites in 92 communities received inspections during 2003. Towns received a letter report with pictures documenting the visit and were given suggestions for improved maintenance procedures. Global Positioning System measurements of these sites were obtained for future reference.

Inspections conducted in 2003 by the landfill unit generated projects that will require our additional attention next year at Addison (leachate discharge), Vinalhaven (residential sampling), Calais (cap damage), Old Orchard (cap damage), and Hancock Tannery (waste evaluation).

Landfill inspections documented gradual residential development pressure near closed municipal landfills throughout the state. Much of our work in the future will involve educating municipalities to the potential risks associated with uncontrolled development next to these closed landfill sites and to assisting towns with the development of land use controls to prevent development in risk-prone areas.

Grants and Contracts:

The Landfill Unit initiated remedial grants with the Towns of Belfast, Pembroke and Warren. The DEP contract with Carole White at the Corinna landfill is still progressing toward a report.

Pembroke Landfill

This 1.5-acre site is located along the elevated banks of a tidal portion of the Pennamaquan River. This is an older landfill that was not originally included in the Department's Landfill Closure Program that ended several years ago. Waste materials continue to fall into the coastal wetland and have migrated up and down the shoreline due to extreme tidal action in this area. This is a lightly populated residential area with several nearby lots that are now preparing to undergo development in the near future. In addition to the migration of wastes into the tidal area, DEP is concerned for the physical hazard the location poses to residents of the area.

Slope erosion at Pembroke landfill.

With DEP financial assistance, a town contractor is currently developing a feasibility study to determine the most cost-effective means to clean up shoreline wastes and to stabilize the landfill toe and waste pile. The DEP anticipates that the remedial construction work will take place between Fall 2004 and Spring 2005.

Shoreline below the Pembroke Landfill.

Well installation at the Warren Landfill.

Wells Route 9B (Abenaki Trail) Landfill

During the 1970's and 1980's a residential subdivision was established on top of and adjacent to the landfill site. In 2002 DEP and the Town constructed a water line to serve impacted and at-risk homes. Soils, soils gas and indoor air quality investigations continue at this landfill. Preliminary testing indicates possible risks from landfill gases including methane and several volatile organic compounds in locations outside of homes. Indoor home air quality does not appear to have been adversely affected based upon work completed to date. Depending upon types and levels of contaminants found in the soils outside of the homes, it may be necessary to consider further remedial actions at this location.

Cutler Landfill

This 1-acre landfill with adjacent sand/salt pile is located on the west side of Route 191 just north of Cutler village. Two trailer lots were developed within 300 feet and downgradient from the landfill by the time of closure in the late 1990's. DEP evaluation of the residential well water quality indicated clear impacts from both the landfill and sand/salt pile. Residents were supplied with bottled water, and a review of remedial alternatives with the Town and owners indicated that the best remedy might be to have the Town purchase the affected lots and to move the owners to other locations. Landfill Remediation Program Laws provide for State assistance with property purchases, provided this measure is cost-effective and protective of public health and the environment. The DEP is working with the Town and owners to finalize the property transactions. Deed Covenants will restrict future uses on these properties.

Warren Municipal Landfill

The 4-acre Warren Municipal landfill closed in 1996. Post-closure monitoring has confirmed the continued presence of volatile organic compounds including benzene, chloroethene, trichloroethene and vinyl chloride above Maine's Maximum Exposure Guideline standards. Several inorganic contaminants including arsenic, manganese and sodium have also been identified. Current development near the landfill appears to be up-gradient of the site and does not appear to be at risk from landfill contaminants. Large undeveloped areas are located south and west of the site and could potentially be developed in the future. The DEP is currently working with the Town to identify the extent of off-site contamination, if any, in order to formulate plans to control residential well development in the area.

Belfast Municipal Landfill

The 12-acre Belfast Municipal landfill, closed in 1997, is the subject of a DEP funded study to identify off-site impacts attributed to the landfill. The area near the landfill has faced increasing residential development pressure in recent years. The continued presence of several inorganic contaminants, as well as benzene, has been identified in on-site monitoring wells during the post-closure monitoring program. To date, no residential wells have been impacted by landfill contaminants. This DEP funded study is designed to locate areas of potential risk so that the City can take action to control future residential development.

Local Fort Fairfield resident supervising DEP staff during site inspection.

Post closure monitoring

DEP landfill unit staff reviewed annual or biannual post closure sampling reports submitted by a total of 50 cities and towns. These reports document ground water conditions at sites that pose potential risks to the environment or to human health.

Petroleum Hydrocarbon Remediation Program

The Petroleum Remedial Planning Unit (RPU) directs the remedial efforts at the state's highest priority and most complex oil contamination cases. Our project managers work hand-in-hand with members of Bureau's Response Services, and Technical Services Divisions, as well as many other Departments within state government to address releases of petroleum products into the environment. RPU managers are currently working on fifty-eight sites located throughout the State. In 2003 RPU managers oversaw work on twenty-four of the top thirty sites reported on the Statewide Petroleum Priority List. Our three Augusta-based Project Managers completed remediation at nineteen high priority sites this year, while a total of sixty cases were closed in the Eastern and Northern Maine Regions.

RPU Managers conducted seven Public Informational Meetings during 2003. We are often involved in politically sensitive and environmentally challenging remedial projects. Sites typically range in complexity from recovering petroleum product releases at private homes and replacing impacted residential water supplies, to regional contamination issues where entire villages must be provided with a replacement municipal water supply and associated infra-structure.

In 2003 our Project Managers administered $1,685,000.00 in remedial service contracts that included: well-drillers, specialized services technicians, water treatment vendors, environmental services professionals, design engineers, surveyors, legal services, laboratory services and FASTRACK consultants.

— Tom Benn, Unit Leader

Remediation Projects, Central and Southern Maine

Harmony Village: (B-586-01, and B-402-02) Conducted subsurface investigations at the Harmony AG to delineate the extent of soil excavation. Monitored groundwater conditions at the old store site, and from area homeowner water supply wells. Gathered POE filter system samples and monitored effectiveness of system.

2003 Remedial Costs: $15,191.61

Post site restoration across the street from the Harmony AG.

Athens: (B-643-98) Abandoned a contaminated water supply well, and drilled two (2) replacement supplies for area homeowners wells impacted by Gasoline Range Organics (GRO) contamination. Periodic water sampling continues.

2003 Remedial Costs: $21,061.35

Winthrop Fuel Oil Release (A-240-01) Site closure was planned for late last year, however Diesel Range Organic (DRO) laboratory test results showed the re-appearance of fuel oil contamination. POE filters were reinstalled, and currently staff is evaluating the site for a potential well replacement.

2003 Remedial Costs: $2650.00

Tenants Harbor Village Replacement Water Supply System: (A-386-98, et al) After completion of the construction of a large municipal water supply system, staff are assisting in the negotiation of a 20 Year Operational Subsidy Agreement for the replacement utility. Completed real estate acquisitions of all lands located within Zone 1 of the Wellhead Protection Area: approximately 128 acres.

2003 Remedial Costs: $131,635.00

Harpswell, Lowell Cove: (P-18-92) Continued with removal of POE devices located on area homeowner wells, as a result of effective soil and groundwater remediation done over the past year. POE was re-installed on one (1) homeowner well as contamination reappeared this summer. Monitoring of groundwater treatment system employed at Sunday School property continues as well.

2003 Remedial Costs: $99,676.02

Belgrade Fuel Release: (A-298-02) Removed three (3) POE filter systems installed on homeowner water supply wells located in the area of the suspected product release. Ongoing groundwater monitoring shows the continued decrease in contaminant concentrations.

2003 Remedial Costs: $11,052.00

Friendship Fuel Oil Release: (A-650-03) Worked with DEP Responder, Dan Davis in the removal of sixteen (16) yards of demolition debris and oil contaminated soils from beneath a residence located within 500 feet of the

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Friendship Municipal Well Field. Recovered approximately 80 percent of the original product released to the environment. Field work was complicated by cold weather, and difficult site conditions.

2003 Remedial Costs: $23,169.00

Farmington; former Red Barn Automotive: (A-221-03) Abandoned contaminated well, and drilled replacement drinking water supply well for the property. Worked with real estate attorney, and potential buyer to formally close the fuel oil remediation case.

2003 Remedial Costs: $3,774.00

Monhegan: (A-549-98) Installed, and operated a groundwater treatment system to reduce MTBE concentrations on the island. Several wells were impacted and have been replaced. Other private water supplies have been provided POE filtration.

2003 Remedial Costs: $102,643.94

Installation of groundwater filtration system for MTBE remediation, Monhegan

Sprucehead Village MTBE Contamination: (A-445-97) DEP continues to operate a seasonal groundwater treatment system at the Off Island Store. Monitored six (6) residential POE systems, and five (5) threatened water supplies. Staff prepared to upgrade the remedial system, and investigated water supply replacement to several area homeowner wells.

2003 Remedial Costs: $98,698.00

Remediation and Technical Services, Eastern Maine Regional Office

In the past year, the Eastern Maine Regional Office (EMRO) and the Northern Maine Regional Office (NMRO) closed 60 sites: 11 underground storage tank (UST) sites, 47 aboveground storage tank (AST) sites, and 2 mystery sites. Of these 60 sites, 30 were closed by Campbell Environmental Group (CEG), 17 by Remediation, and 13 by Technical Services.

On January 20, 2003, there was a reported spill at the Ella Lewis Elementary School in Steuben. Response personnel from the EMRO found about 490 gallons of free product in the school's basement. After pumping out the pool of fuel oil, Remediation and Tech Services were called in to assist with the clean up, installation of an air venting system, water testing, and public relations. The venting system allowed the school to remain open, while the cleanup prevented well water contamination. The investigation raised the estimated amount of product spilled to a total of about 1,230 gallons. The collaborative efforts of Response, Tech Services, and Remediation ensured a quick, efficient and effective resolution to this spill.

In the past year we completed and recorded ten easements that DOT Legal had been working on for several years. In addition to completing the outstanding easements, we processed seven new easement requests in 2003. By the end of the year, three new easements had been completed, with two of the remaining easements delayed due to well water issues. To ensure the timely processing of easement requests, all future easements will be completed by private attorneys.

In September 2003, Remediation and Tech Services took over a difficult project at Piper's Store in Levant (B-119-02). There had been a spill at the store in February 2002, where an estimated 128 gallons of fuel oil had been released. At that time, it was thought that the spill had been sufficiently contained and the risk of contamination migrating off site was low. Later reports of contamination at a nearby residential well and the expressed concerns of neighboring citizens prompted Remediation and Tech Services to respond to the site in September 2003. Following the investigation, remedial actions included the replacement of the contaminated well. After a town meeting held on September 30, 2003, local residents again expressed their concerns. In November, 374 tons of contaminated soil was excavated and removed. The project involved the installation of 50 soil borings and 10 monitoring wells. Water tests were completed each month for 40 nearby drinking water wells from September through January 2004. A pump and treat system was implemented for selected monitoring and recovery wells starting in March, 2004.

At the Fannie Mae Site in Carmel (B-74-97), a replacement private drinking water well was installed and hooked up. Nearby, a new well at the Seafood Galley Restaurant is still being monitored for bacteria. Alternative options are being explored.

In Bridgewater, contaminated soil migrating under the building from leaking AST's required that we contract to have the Corner Store torn down. Once the store was removed we excavated and removed the tanks and approximately 4,600 yards of petroleum contaminated soil.

We investigated the Topsfield Elementary School water supply system in April 2003 after they reported that they had found PCB contamination in their drinking water. Our investigation found that the old submersible pump in the well was leaking PCBs into the water. We contacted the Myers Pump Company who sent its contractor, SUNPRO, to set up a pump and treat system in late April. We are continuing to sample the school water supply system to ensure the water is safe for drinking.

— Jean Flannery

Uncontrolled Sites Program

A milestone was reached this year with the completion of the source removal activities at the Portland Bangor Waste Oil facility (PBWO) in Casco. Collectively, clean up actions at this facility and others in Wells, Plymouth and Ellsworth have cost the citizens of Maine and responsible parties over $20,000,000. This program was also involved with the compressed gas cylinder removal action conducted at the Smith Junkyard in Meddybemps; on-going Feasibility Studies at Kerramerican Mine, Blue Hill and Bangor Landing; and smaller scale investigations at several sites. As sites are remediated there is more Operation and Maintenance and Monitoring related activities; these on-going functions need continued funding, attention and commitment.

— Hank Aho, Unit Leader

Blue Hill Mining District, Blue Hill

In 2002, residential sampling conducted as part of the Kerramerican Mine investigation found that a residence adjacent to the site had a water supply contaminated with 26 ppb cadmium (Maine drinking water standard is 3.5 ppb). Tests from neighboring wells tested low in cadmium. Because the affected well was upgradient from the Kerramerican Mine, DEP hypothesized results could be attributed to a source other than Kerramerican.

In response to the discovery, the Bureau of Health (BOH) and DEP decided to look at other private water wells in the area. In case a widespread problem existed, the agencies wanted residents to know whether their water was fit for consumption.

To reach the necessary people, a voluntary mail-in sampling program was devised and implemented. Of 36 kits initially sent out, approximately 75% were returned for analysis. Results indicated that nine wells could potentially be affected by acid mine drainage. However, several results were difficult to make a determination on because of naturally occurring high mineral concentrations.

Based on these findings, DEP expanded the investigation to better understand the groundwater chemistry in the area. This effort included gathering historical information on other area mines and prospects. DEP also wanted to resample homeowner water supplies whose results indicated potential metals contamination and follow-up with those who did not return the initial home water test kits.

Historical information documented many abandoned mines. Left behind were open shafts and mine tailings, waste rock removed from the ground in order to sink shafts. When this type of metals bearing waste rock and tailings is exposed to air and water, sulfuric acid forms. The resultant runoff releases metals including aluminum, copper, cobalt, manganese, and zinc, allowing them to migrate and impact ground and/or surface water (known as acid mine drainage, or AMD). Theoretically, the scattered shafts and mines could be sources of elevated metals in residential wells.

Water filled mine shaft surrounded by waste rock

Maine Geological Survey (MGS) provided information on historical mine locations. This, together with tax map and topographic information, helped DEP define the limit of the Blue Hill Mining District for the purpose of this study.

Next DEP identified properties that appeared to be at risk to groundwater contamination due to their proximity to an abandoned shaft or waste rock pile. A new list of names was compiled to include the additional homes that now fell within the study area as well as homeowners with elevated results from the previous test.

Survey forms were sent to homeowners requesting information regarding potential evidence of mining on their properties. If homeowners were interested in participating in the study, they indicated so and returned a permission to access property form to the DEP.

In May 2003, DEP staff explored the Mining District area on foot, taking pictures and surveying mine locations with a GPS. Approximately eight open shafts were encountered.

After compiling this information and cross checking the list of homeowners to sample, DEP visited homes and collected water supply samples. Out of 32 samples collected for this phase, approximately half had elevated levels of metals, most commonly iron and manganese. One cluster of homes had arsenic levels above drinking water guidelines. Elevated levels of cadmium, zinc, copper, iron, manganese and sulfate were seen in the four water supplies suspected of AMD. However, because high levels of metals occur naturally in Blue Hill, it is difficult to determine whose water supply is actually affected by AMD.

At the end of this investigation, participating residents were informed

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of the results and DEP advised those with higher levels of metals to contact water treatment specialists. In addition to old mining activity sites, the investigation documented an extensive amount of waste rock along Route 15/176. This material, used to build roads, driveways, and culverts and, in some cases, to stabilize backyard slopes, can be a source of AMD. DEP determined that this widespread use precluded the practical removal of all potential sources of ADM.

Based on this investigation, it is DEP's conclusion that local groundwater is impacted by naturally occurring metals and AMD resulting from former mining operations. The most practical remedial response is to ensure that residents are aware of the potential problem and are informed of the appropriate precautions available to them.

Portland Bangor Waste Oil, Casco

Continuing a remedial action begun in the fall of 2002, Uncontrolled Sites Program staff returned to Casco to complete the removal of soil contaminated with waste oil containing solvents, lead and PCBs. Over the course of this project, 5,320 tons of contaminated soil was removed for disposal as non-hazardous special waste at Pine Tree Landfill in Hampden, and 1,566 tons of contaminated soil was removed and disposed of as hazardous waste at Stablex, in Quebec, Canada. The total cost of the project was just over $911,000.00, including monitoring of neighborhood wells during and after the soil removal activities. Investigation of the groundwater plume was completed recently, with a report due in Spring 2004.

Contaminated soil awaiting transport & disposal.

Kerramerican Mine, Blue Hill

Work focused on completing the Feasibility Study that will result in identifying preferred remedies to be implemented at the Site. Though the FS has not been finalized, the state has accepted in concept the remedies identified in the draft FS. Kerramerican Mine Site (Site) was separated into several operable units (OU). Each OU has a remedy tailored to that area. The most significant OU, the Plant Area, approximately 14 areas in size, is proposed to receive a low permeability cover system. This will significantly reduce surface water infiltration and ultimately reduce the metals loading to Second Pond.

Carleton Stream looking west toward Second Pond. Plant area OU is to the right.

As the some of the remedies under consideration for the Tailings Pond OU would impact wetlands it was necessary to perform an assessment to determine the size, value and function of wetland areas of interest. This work resulted in a wetland assessment report that was provided to the appropriate state and federal agencies. As a follow-up, Kerramerican was asked to review the proposed Tailings Pond OU remedies and evaluate their potential impact to the wetlands areas.

A December 2003 meeting was held among the federal agencies (USEPA, Army Corps of Engineers and US Fish and Wildlife), DEP, and representatives of the Responsible Parties to identify which remedy to consider further. After discussion it was decided to pursue the alternative that covered bare spots (areas of little or no vegetation). This remedy eliminates contact threats, reduces loading rates to the Carleton Stream system and preserves the greatest amount of wetlands.

Flotation Products, Warren

This is an example of what can occur when a small manufacturing facility ceases operation. Warren Floatation, an affiliate of Crowe Rope, manufactured polyethylene rope. Investigation of Warren Floatation detected chlorinated compounds, used in the manufacture of polyethylene rope, in on-site soil and groundwater. Though a comparatively small area is impacted, this contamination needs to be addressed as the site is surrounded by private homes.

Operations and Maintenance/ Monitoring (O&M/Mon)

O&M functions are those activities intended to maintain a remedy over time to ensure protectiveness. Monitoring measures the effectiveness of the remedy. Examples of remedies include, cover systems, caps, groundwater pump and treat systems (P&T), point of entry treatment systems (POETS), and vapor extraction systems. With a few exceptions, remedies require maintenance. Vegetation grows, frost heaves, pipes clog, pumps break down and soil erodes.

The Division of Remediation is involved with O&M/Mon at 43 sites throughout the state. Of these, the Uncontrolled Sites Program funds and/ or oversees 37. The remainder are overseen by the Superfund Program. Of the 37, 10 are Responsible Party lead O&M/Mon actions. In 2003, the Uncontrolled Sites Program expended approximately $162,000 on activities related to O&M/Mon. An additional $148,561 was provided to the Town of Corinna to assist with the cost of expanding, maintaining and operating their water supply system.

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Meddybemps (continued from front page)

Projects Incorporated (EPI) of Gray to consolidate and dispose of the waste.

EPI technicians consolidate waste in preparation for off-site disposal.

Twenty-five state employees worked on this project throughout the summer including: 11 MEDEP staff providing oversight for the removal activities and 2 providing support in the office, 2 Assistant Attorneys General, 6 State Police, 2 Fire Marshal staff and staff from Department of Transportation and Department of Human Services Radiation Control Unit. The three contractors MEDEP had onsite employed up to 30 people; 16 of these workers were hired locally and received safety training for working with cylinders and hazardous materials. Staff worked 12 hour days, 5 days a week from May 5 through September 5, 2003 at a cost of over $1.8 million to remove the wastes listed in the following table:

125,639	pounds hazardous waste
38,170	pounds non-hazardous waste
3,035	gallons waste oil
2,000,000	pounds of asbestos contaminated soil (friable)
166,000	pounds of acetylene cylinders (full of asbestos) (non-friable)
800	pounds of refrigerants
1	radiation source
40	pounds of dynamite
300	blasting caps
9,281	total cylinders were inventoried and processed