PHASE II
ENVIRONMENTAL SITE ASSESSMENT
BROWNFIELDS PILOT PROJECT
BATES MILL COMPLEX, LEWISTON, MAINE
MILL 1, MILL 2, MILL 4, MILL 5, MILL 9,
#1 WING, #1 STOREHOUSE, #2 WING, #2 STOREHOUSE

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October 23, 2001
Project 3253: 1044B.doc

and duplicate, respectively. Old bags of Sodium-based fabric treatments were observed in the upper floors of this building; these chemicals are the likely source of elevated Sodium levels in the chemical residues. Slightly elevated levels of coal and coal ash-derived chemicals were also detected in this sample, perhaps indicating that some coal tar-based dyes had been used in this area in the past.

4.8.7 Transformer Oils

A large transformer was observed on the west end of the first floor of Mill 4 (Figure 11B). The transformer was mounted on a pole approximately 8 feet above the grated floor. A sample of the cooling oil, M4-OL-01-01, was drawn from a drain at the base of the unit. A duplicate, M4-OL-01-02, was also collected. PCBs were not detected above laboratory detection limits in either sample.

4.8.8 Chemical Residue in Railroad Tank Cars

The basement of Mill 4 contains two railroad tanker cars which were placed here for use as ASTs in the fabric bleaching process. The tanks were reported by Bates of Maine personnel to contain residual solids left over from fabric bleaching chemicals. Several inches of solid residue was observed in the bottom of each of the two tanks. The residue contained white, powdery material and a dark, sludge-like substance. Sample M4-T1-00-01 was collected from Tank #1 using a remote sampling device (i.e., the sampling team did not physically enter the tank). No sample was recovered from Tank #2. The sample was analyzed for TAL metals, SVOCs, and VOCs. The sample was reported to contain 83 ug/kg Mercury and 13,400 mg/kg Lead, exceeding the MEDEP adult worker remedial action guideline. Low levels of coal tar-related compounds were also reported present in the sample (Table 5). VOC analytical results reported MEK and Acetone at low concentrations often associated with laboratory contamination.

4.9 MILL 5

4.9.1 Survey Results

Mill 5 is located north of the cross canal and is connected to the rest of the Mill Complex by two overhead walkways that traverse the canal. The building consists of a ground floor, mezzanine level, upper floor, and loft area (Figure 12).

The site survey of Mill 5 included both floors of the building, the roof, and the area outside of the building. Areas around the building were visually evaluated for the presence of stains, fill pipes, drains, or other evidence of either environmental impacts or building features that may be associated with chemical usage or disposal. To perform the survey, a two-person team walked through each area on February 9, 2000, making note of observed sediments, debris, building materials, and other items that may require further characterization.

The Ground Floor is shown on Figure 12. During the site survey, Summit observed an open drainage trench in the floor of the mezzanine level of the ground floor. The trench contained dry sediment, debris, and rocks. According to information provided in interviews with Mr. Bud Lewis, the trench/floor drain received only water that seeped through building walls during extreme weather or spring runoff season, and that employees would sometimes wash down the

mezzanine floor, rinsing the area into the floor trench. Summit also observed several discharge pipes protruding from the ceiling of the ground floor, indicating that some bleaching, washing, or dying solutions may have been released to the floor trenches at some time. Because of these many historical discharge sources, Summit concluded that environmental impacts may be present in the debris and sediment within these trenches.

Painted surfaces in the ground floor level of the building showed signs of chipping and peeling, and large amounts of paint chips were observed on the floor.

Mill 5's Top Floor (Figure 12B) consists of large open building areas, office space, shop area, and a packing/shipping room. Walls are constructed of concrete and wood, and the ceiling is concrete. Floor drains or trenches were not observed, with the exception of an elevated platform and mezzanine (also known as the Loft) that contained tub washers for starching and treating fabrics. Floor drains in this area were traced to their connections with the municipal sanitary sewer system.

At the time of Summit's survey, cardboard shipping boxes stacked in the packing/shipping area were in direct contact with the building's wood floors. Boxes at the bottom of each stack were stained by oils present in the wood floors. Since this oil was finding its way into materials that were leaving the building, Summit concluded that the oily floors warranted sampling.

Summit observed an area in the shop containing wood floors heavily stained with oils, and oily sheens were present on top of the floors. Since this area had been used for many years to maintain equipment related to manufacturing and building operations (including electrical equipment) Summit concluded that testing for PCBs was warranted.

At the time of the building survey Summit also observed several types of process chemicals, including bags of powdered bleaching chemicals, caustics, drums of acid, dyes, oils, lubricants, and other chemical items that were in use by Bates of Maine. These materials were not targeted for sampling because they were the property of the building occupant and were being used in daily operations.

The ground surface around the exterior of Mill 5 appeared to be free of stains, empty containers, fill pipes, tanks, containers, or other evidence of environmental impacts. Commercial properties located along Main Street abut the northern wall of Mill 5, and some storage of used automotive parts was observed in a narrow alleyway adjacent to an automotive repair facility. The parts storage area is located on property that is not part of Mill 5, so this area was not targeted for further investigation as part of the Mill 5 evaluation.

A large room at the southern end of Mill 5 contains electrical generation equipment, turbines, meters, and transformers. This equipment is owned and operated by a utility company and was not considered to be part of Mill 5. The room, equipment, penstocks located beneath the building, and the associated cross-canal system was not included in this project.

4.9.2 Asbestos-Containing Materials

As described in Section 2.2, the LMRC's policy is to remove all suspect ACM, therefore samples of suspect ACM were not collected within Mill 5. ACM surveys of other areas of the Mill Complex are documented in Summit's Phase I ESA. During the site survey Summit observed suspect

ACM in a utility room at the southern end of the mezzanine level in Mill 5. The condition of the observed suspect ACM was poor.

4.9.3 Lead-Based Paint

Field measurements of LBP for Mill 5 by floor were collected on May 11, 2000, and are presented in Table 1, and a full report is included in Appendix D. Sample locations for data presented in Table 1 are shown on Figure 12A. LBP readings were not acquired on the top floor of Mill 5 because Bates of Maine employees were working in this area at the time of the survey. The State of Maine considers lead in paint to represent a potential health hazard at concentrations above 2.0 mg/cm^2. The Occupational Safety and Health Administration (OSHA) does not specify an amount of lead that is permissible during construction or demolition activities, but does regulate airborne lead levels for workers. Based upon the instrument sensitivity, XRF readings of 0.5 mg/cm^2 or above should be considered positive for lead. LBP was detected on the following surfaces within Mill 5:

Ground Floor	Second (Top) Floor
Walls	Painted Floors
Support Columns	Support Columns
Ceiling Beams (0.3 mg/cm^2)	Walls
	Ceiling Beams

4.9.4 Indoor Air Quality

Summit did not conduct an IAQ survey in Mill 5 because of the open nature of the building. Loading dock doors, broken windows, and open hallways contribute to regular air flow through the building, so it is unlikely that an accurate characterization of IAQ could be performed. IAQ surveys performed in other areas of the Mill Complex have determined that microbial growth is common in the mill buildings, encouraged by damp and warm conditions. Mill 5 does not have open drainage ways leading to the cross canals or other water conveyances, except for the areas used for electrical power generation, which are not included in this report.

Dust, delaminating paint chips, animal droppings, and other debris can cause IAQ problems, and each of these has been observed in Mill 5.

4.9.5 Contaminated Soil/Sediment

Summit collected sediment/soil samples from one location in Mill 5 on April 24, 2000. The sample was collected from a floor trench on the mezzanine level of the ground floor. Sample locations are shown on Figure 12. The soil sample was analyzed for SVOCs, metals, and DRO. Laboratory results are summarized on Tables 2 and 4 and laboratory reports are included in Appendix F.

One composite soil sample was collected from the floor trench on the mezzanine level of the ground floor. Summit composited sample M5-SS-00-01 from four grab samples collected in the trench as shown on Figure 12. Data from sample M5-SS-00-01 did not show elevated levels of metals or SVOCs. One SVOC, Benzo(a)pyrene, was reported at an estimated value that was well below the laboratory detection level. DRO from this sample was reported at 230 ppm.

The reported levels of metals and SVOCs likely reflect the lack of chemical processes used in the manufacturing processes located in this area of the building.

A duplicate soil sample from the floor trench, designated as M5-SS-00-02, was also collected and analyzed for the same parameters as the sample described above. Analytical results were similar; elevated levels of SVOCs or metals were not reported. DRO from this sample was reported at 340 ppm.

4.9.6 Miscellaneous Samples

Summit collected a hexane wipe sample (M5-OL-01-01) from the wood floor in front of a parts washing sink in the Mill 5 Shop area, as shown on Figure 12. PCBs were not detected above laboratory detection limits in this sample. Sample M5-OL-01-03 was collected as a duplicate sample from this same area in the Shop. PCBs were not detected above laboratory detection limits in this sample.

Summit collected a hexane wipe sample, M5-OL-01-02, from the floor in the Packing/Shipping area, as shown on Figure 12. PCBs were not detected in this sample above the laboratory detection limit.

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#1 WING, #1 STOREHOUSE, #2 WING, #2 STOREHOUSE

EXECUTIVE SUMMARY

BACKGROUND

In 1999, the City of Lewiston applied for and received a US EPA Brownfields Pilot Project Grant for the Bates Mill Complex. Grant funds were to be used to complete a Phase II Environmental Site Assessment (ESA) of the Mill Complex. The City retained Summit Environmental Consultants, Inc. (Summit) to complete the Phase II ESA and Summit initiated work in July 1999. As Summit began Phase II activities, the City was negotiating the sale of three parcels of the Mill Complex. This sale would include Lot 2 (consisting of Mill 3), Lot 3 (consisting of Mill 6 and several adjoining parcels), and Lot 5 (consisting of Storehouse 7 and several adjoining parcels). In order to provide the City with environmental assessment data as soon as possible, Summit focused its initial efforts on these three parcels. A report documenting the results of Phase II assessments of these parcels was presented to the City of Lewiston and EPA on March 20, 2000. Remaining areas of the Mill Complex are addressed in this report. These areas include Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, #2 Wing, #2 Storehouse, and alleyways, yards, parking areas, and other areas on the Mill Complex property.

The objectives of the Phase II ESA were to 1) identify environmental conditions that could limit the value, use, or redevelopment of the Mill Complex, 2) collect and analyze samples of suspected environmental contamination, 3) interpret the analytical results with respect to Mill redevelopment, and 4) if necessary, provide the City with recommendations for the remediation or additional assessment of environmental contamination.

The Phase II ESA involved a site survey during which a team walked through the buildings on the property, entering basement and crawl space areas, raceways, elevator shafts, dust chutes, roofs, attics, and other accessible areas within the buildings. Outside areas were also surveyed as the team noted pipes, stained soils, or other evidence of potential environmental concerns. Following the site survey Summit prepared a proposed sampling plan which was presented to the Maine Department of Environmental Protection and the United States Environmental Protection Agency in the form of a Quality Assurance Project Plan (QAPjP). The QAPjP was approved, and the sampling effort was undertaken. Samples were submitted to a qualified laboratory and the results were used to make recommendations for handling identified environmental conditions in a responsible manner.

For each area of the Mill Complex Summit has developed a list of environmental concerns. As shown below, some of these issues would not require an active remediation program. Such issues are described in the Phase II report as "Conditions Requiring Limited or No Further Action." Other environmental issues warrant some action being taken, and these are presented as "Conditions Recommended for Remedial Actions or Further Investigation."

Certain environmental issues, including lead-based paint (LBP), asbestos-containing materials (ACM), indoor air quality (IAQ), Polychlorinated Biphenyls (PCBs) in electrical equipment, and others, were generally considered to be issues that would not require additional remediation efforts beyond those which the Lewiston Mill Redevelopment Corporation (LMRC) has adopted as standard operating procedures. As a matter of practice paint is removed from building surfaces, suspect ACM is removed under controlled abatement conditions, air handling systems are upgraded, and older electrical equipment is taken out of service and/or removed. These standard procedures are generally considered adequate for the conditions observed.

Identified Environmental Conditions on Lot 4 – Mill 9

Summit found the following environmental conditions that warranted assessment and/or sampling on Lot 4 (Mill 9):

- LBP
- ACM
- IAQ
- Potential PCBs in electrical equipment
- Floor trench sediments contaminated with semi-volatile organic compounds (SVOCs) and diesel-range organics (DRO)
- DRO contamination of water in condensate sumps
- Low pH fly ash from base of chimney
- Ground water samples reported low concentrations of 1,1,1-Trichloroethane

Mill 9: Conditions Recommended for Limited or No Further Action

Based upon the results of the Phase II assessments, Summit concludes that the following environmental conditions require only limited or no further action:

- LBP
- ACM
- IAQ
- Potential PCBs in electrical equipment – if electrical panels and equipment are to be taken out of service and removed from the building for disposal/recycling, an evaluation of cooling oils for PCBs should be performed.
- Chimney fly ash – this material was removed and properly disposed of in February 2000, so no further action is recommended. In the future, if removal of fly ash is required, the material should be characterized to facilitate proper worker protection measures and proper disposal methods.
- Ground water contamination – low levels of DRO and VOCs detected in ground water samples from a monitoring well located east of Mill 9 are indicative of past industrial activities on the property. As no drinking water supply wells are located in this area the potential for exposure is very low. No further action is recommended.

Mill 9: Conditions Recommended for Remedial Actions or Further Investigation

Summit identified two issues on Lot 4 (Mill 9) where remediation is recommended:

- LBP
- ACM
- IAQ
- Soil Contamination - Soils located at depths of 6 to 10 feet below ground surface north of Mill 5 were found to contain low levels of volatile organic compounds. As no drinking water supplies are located in this area no further action is needed.
- Process Chemicals – It is Summit's understanding that the process chemicals left in the building are the property of Bates of Maine or a parent company. Bates of Maine is responsible for the proper removal of the chemicals and waste products which include drums, buckets, and smaller containers of liquid and solid chemical products as well as bagged chemicals, waste fluorescent light tubes, and lubricating oils. As Bates of Maine and their parent company have expressed a willingness to remove these items in a responsible manner no further action is recommended, other than verification by the LMRC that the materials have been removed from the property.

Mill 5: Conditions Recommended for Remedial Actions or Further Investigation

- Soils/sediment in the Ground Floor trenches

Soil samples collected from the floor trenches in Mill 5 were found to contain moderately elevated concentrations of DRO and some SVOCs at low concentrations. As a result, Summit recommends that these soils/sediments be removed if the floor trenches are to be used as drainage structures in the future. If the trenches will not be used in the future then we recommend that the soils/sediments be encapsulated in place.

Mill 5: Recommended Remedial Alternatives

The floor trenches in Mill 5 are estimated to contain a total of fifteen cubic yards of sediment and debris. The sediments were reported to contain low levels of petroleum contaminants and so can be disposed of at the City of Lewiston's Municipal Landfill.

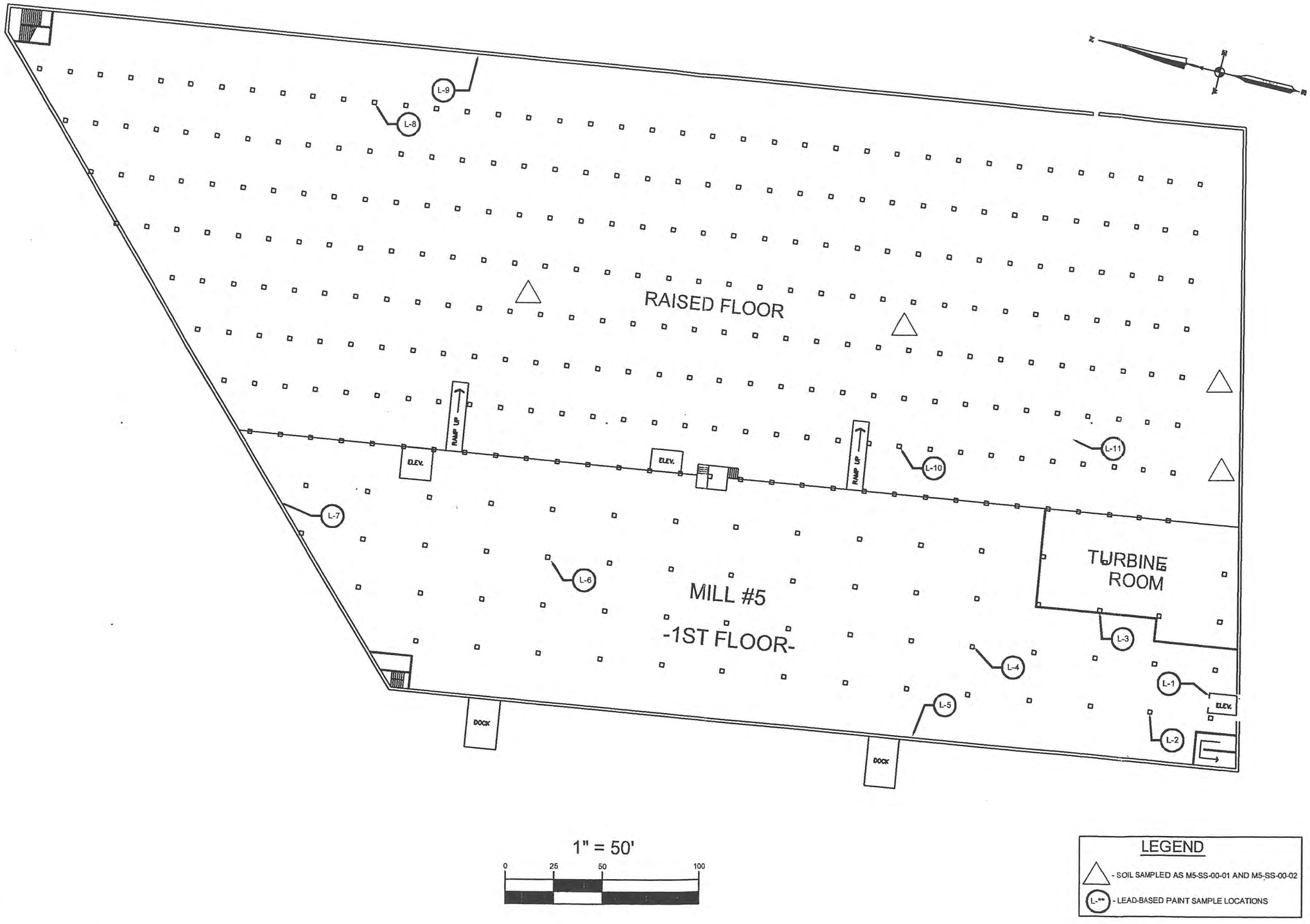
<u>Removal and Decontamination</u>
Removal and decontamination of the floor trench sediments would consist of the following steps:

1. Prepare the site for remediation by establishing work area barriers, a decontamination station, and dust control measures.
2. Remove wood and other debris and dispose as non-hazardous waste.
3. Remove sediments and clean floor trench using steam washers and a vacuum unit. An estimated 10 cubic yards of sediments will be disposed in the Lewiston Landfill.

Sediment Removal and Cleaning of Floor Trench.....$6,000

Many of the remedial actions recommended for the property are similar in nature. Soil/sediment removal and equipment cleaning are common tasks that will be undertaken in several areas of the property over the coming years. Summit recommends that standard

operating procedures be put in place to cover these activities, as well as related on-site activities such as general excavating, removal and replacement of older electrical equipment, and similar tasks.



SOURCE:PLATZ ASSOCIATES, 1999

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DATE: 5/16/01	SCALE: 1" = 50'

TITLE: MILL #5

PROJECT: BATES MILL COMPLEX PHASE II ESA

CLIENT: CITY OF LEWISTON, MAINE

FIGURE 12

Engineering Evaluation and Cost Analysis
Mill 1, Mill 2, Mill 4, Mill 5, Mill 9,
#1 Wing, #1 Storehouse,
#2 Wing, and #2 Storehouse
Bates Mill Complex
Lewiston, Maine

EXECUTIVE SUMMARY

The City of Lewiston has contracted with Summit Environmental Consultants, Inc. to perform an Engineering Evaluation and Cost Analysis (EE/CA) of a proposed Non-Time Critical Removal Action (NTCRA) at nine sites within the Bates Mill Complex as part of a United States Environmental Protection Agency (EPA) Brownfields Cleanup Revolving Loan Fund Program. The nine sites are Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, #2 Wing, and #2 Storehouse (collectively referred to as the Site).

A previously completed Phase II Environmental Site Assessment concluded that NTCRAs are appropriate because the hazardous substances at these Sites have the potential to cause unacceptable exposure risks to future workers.

Lead-based paint and suspect and confirmed asbestos-containing materials have been identified at the nine Sites discussed in this EE/CA. However, remediation of these items will be addressed at a future time. It is not expected that ACM or lead-based paint will be encountered during the remedial actions recommended in this EE/CA. If ACM or lead-based paint is encountered during a remedial action, appropriate ???

Because extensive renovations of the Bates Mill Complex are planned, the goal of the removal action is to mitigate risks posed to future worker safety prior to redevelopment. This EE/CA has been developed to help achieve the goal of protecting site workers, and also to mitigate the potential for chemical exposure risks for future occupants.

This EE/CA addresses remedial actions at the following nine sites within the Bates Mill Complex:

Mill 1

Soil samples collected on April 19, 2000 from the basement of Mill 1 were found to contain metals and semi-volatile organic compounds (SVOCs) at concentrations that exceeded the Maine Department of Environmental Protection (DEP) adult worker remedial action guideline and the EPA ingestion/inhalation guideline concentrations. Soils beneath wood floors in the basement of Mill 1 and in the adjacent alleyway between Mills 1 and 3 have been found to contain relatively high levels of volatile organic compounds (VOCs).

The remedial technology proposed for basement soils at Mill 1 is isolation by repairing or replacing the wood floor in areas where it is missing or damaged. Repairing the wood floor is a practical means of reducing the potential for exposure to the contaminants present in the sub-floor sediments. Analysis of this remedial technology indicates that it can be easily implemented and is a cost-effective means to address the contamination at this Site.

One remedial alternative that has the potential to achieve the removal action goals for subsurface soil conditions at Mill 1 is removal of existing flooring, conduct additional testing to define the zone of contamination, prepare the soil surface by leveling and removing debris, and place an impervious barrier, such as an HDPE liner or concrete, over exposed soils. Analysis of

this remedial technology indicates that it is easy to implement, and is an effective, low cost technology.

Mill 2

Soil samples collected beneath wood floors in Mill 2 were found to contain elevated concentrations of diesel range organics (DRO). Samples from the floor of the dust chutes contained elevated levels of 2-Butanone and DRO, as well as five SVOCs at concentrations that exceeded the DEP adult worker remedial action guideline. Soil samples from the storage room contained elevated levels of DRO, as well as seven SVOCs at concentrations that exceeded the DEP adult worker remedial action guideline.

The remedial technology evaluated for soils at the base of the dust chute at Mill 2 was removal of contaminated soils. Analysis of this remedial technology indicates that it is an effective, easily implemented, and cost-effective technology that addresses the contamination at this Site.

A remedial technology that has the potential to achieve removal action goals for soils in the basement storage room is isolation of the soils by repairing the wood floor. Isolation is easily implemented, effective, and a low cost alternative. It should be noted that, in the future, it may be necessary to remove the wood floor. If the floor is removed, the soils beneath should be removed or encapsulated to eliminate the potential of future occupant exposure to contaminated soils.

Mill 4

Two railroad cars in the basement contain caustic residues that were shown to have relatively high lead concentrations. Soil samples collected from the basement were found to contain arsenic at concentrations that exceeded the EPA's soil ingestion screening level.

Removal and disposal of residual caustic material from the two railroad cars was evaluated as the remedial alternative that has the potential to achieve the removal action goals. This option is effective for eliminating the source of contamination, can be easily and quickly implemented and is cost-effective. This will require a trained crew capable of performing confined space entry and working in a hazardous environment. As an option, the railroad cars can be cut apart in place and removed from the building.

One remedial alternative that has the potential to achieve the removal action goals has been evaluated for soils in the basement of Mill 4: encapsulate sediments in-place. This option effectively eliminates exposure to contaminated soils, is cost effective, and maintains the structural integrity of the building.

Mill 5

Soil samples collected from the floor trenches of Mill 5 were found to contain elevated concentrations of DRO and low concentrations of SVOCs. However, detected SVOCs were not reported above the DEP adult worker remedial action guidelines or the EPA ingestion/inhalation guideline concentrations.

Two remedial alternatives that have the potential to achieve the removal action goals have been evaluated for soils/sediments in the floor trenches of Mill 5: 1) remove soils/sediment from floor trenches, or 2) encapsulate soils/sediments in place with concrete if the trenches will not be used in the future. Both alternatives are easily implemented and effective means of reducing potential future risks to occupants.

1.0 SITE CHARACTERIZATION

1.1 SITE DESCRIPTION AND BACKGROUND

The City of Lewiston (the City) has contracted with Summit Environmental Consultants, Inc. (Summit) to perform an Engineering Evaluation and Cost Analysis (EE/CA) of a proposed non-time critical removal action (NTRCA) at nine sites within the Bates Mill Complex as part of a United States Environmental Protection Agency (EPA) Brownfields Cleanup Revolving Loan Fund Program. The nine sites are Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, #2 Wing, and #2 Storehouse (collectively called the Site).

The Bates Mill Complex is located in the City of Lewiston (Figure 1). The Bates Mill Complex originally occupied approximately 1.2 million square feet of space on a 10-acre parcel of property. The Complex is bounded on the east by Canal Street, on the south by Chestnut Street, on the west by Lincoln Street and on the north by Maine Street. Open canals are present to the north and east, and an underground raceway is present along the southern end of the Complex. The Complex topography is relatively flat but drops approximately 10 feet to the west along a retaining wall at the southern end of the property.

The Mill Complex currently consists of four separate buildings to the north and west (Mill 5, Mill 6, Storehouse 7, and Boiler Plant Mill 9), and a series of connected buildings to the south and east (Mills 1-4, #1 Storehouse/Wing, #2 Storehouse/Wing and #4 Storehouse/Wing, as shown on Figure 2. Mill buildings are generally comprised of several floors and are constructed of brick with wood support posts and beams. Interior portions of the buildings are open space with wood floors. Some office space has been partitioned out of the original building space.

The City of Lewiston retained Summit to complete a Phase I Environmental Site Assessment (ESA) on the Mill complex in 1996. Summit identified a variety of environmental conditions requiring additional assessment or remediation. In 1998, the EPA Emergency Planning and Response Branch completed a hazardous material removal program at the Mill. The EPA removed transformers containing polychlorinated biphenyls (PCBs), drums of chemical waste, and asbestos-containing materials (ACM).

In July 1999, Summit completed a Phase II ESA on a portion of the Mill Complex under an EPA Brownfields Pilot Project grant. The Phase II ESA documented environmental conditions at Mills 3 and 6 and included remedial alternatives for identified contamination. The Phase II ESA concluded that a NTCRA is appropriate at Mills 3 and 6 because the planned redevelopment of the Bates Mill Complex will result in the potential for increased worker exposure to hazardous substances at these Sites.

Summit has recently completed additional Phase II activities on Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, #2 Wing, #2 Storehouse, and alleyways, yards, parking areas, and other areas on the Mill Complex property. A report documenting the results was presented to the City of Lewiston and EPA on December 4, 2001. Similar to the Phase II ESA at Mills 3 and 6, the Phase II ESA at Mill 1, Mill 2, Mill 4, Mill 5, Mill 9, #1 Wing, #1 Storehouse, #2 Wing, and #2 Storehouse concluded that a NTCRA is appropriate at these Sites because the planned redevelopment of the Bates Mill Complex will result in the potential for increased worker exposure to hazardous substances.

Section 1.3 discusses the results of the Phase II ESA concerning environmental conditions at these Sites. Refer to Summit's Phase II Environmental Site Assessment for a detailed discussion of the environmental conditions at the Bates Mill Complex.

The City received funding from EPA to establish a Revolving Loan Fund (RLF) to address the costs associated with remediating the areas of documented contamination. As part of the National Contingency Plan (NCP), the Brownfields RLF requires development of an EE/CA. The first step in the EE/CA process was the development of an EE/CA Approval Memorandum, which was completed in September 2002. Refer to Appendix A for a copy of the Approval Memorandum.

1.2 PREVIOUS REMOVAL ACTIONS

In addition to Summit's Phase I ESA and Phase II reports for referenced lots, other environmental assessments have been completed on the Mill property. Remedial actions consisting of ACM and lead-based paint (LBP) abatement, as well as the US EPA hazardous substance removal described above, have also occurred. Summit identified the following relevant environmental assessment and remediation reports. These reports document the majority of the ACM and LBP assessment or abatement activities that have historically occurred in the Mill Complex:

- 1996, Summit Environmental Consultants, Inc. Phase I Environmental Site Assessment Report: Bates Mill Complex, Lewiston, Maine.
- 1997, Environmental Management, Inc. Bates Mill #3 Asbestos Containing Materials Survey and Lead Paint Inspection Report.
- 1998, Summit Environmental Consultants, Inc.: Phase I Environmental Assessment Report: 100, 104, 108, 118 Lincoln Street (4 reports), Lewiston, Maine.
- 1998, US Environmental Protection Agency. Removal Program Preliminary Assessment/Site Investigation Report for the Bates Mill Site, Lewiston, Maine.
- 1999, US Environmental Protection Agency. Removal Program Action Report for the Bates Mill Removal Site, Lewiston, Maine.
- 1999, Environmental Management, Inc.: Phase I Environmental Site Assessment Report: 60, 78, 80, 82, and 84 Lincoln Street (5 reports), Lewiston, Maine.
- 2000, Summit Environmental Consultants, Inc. Phase II Environmental Site Assessment Report: Bates Mill Complex, Lewiston, Maine; Mill 3, Mill 6, and Storehouse 7.

1.3 SOURCE NATURE AND EXTENT OF CONTAMINATION

Before completing site surveys, assessments, or sampling, Summit assembled a QAPjP in accordance with US EPA guidance. The US EPA approved the QAPjP in September 1999. The QAPjP documented Project Management, Measurement/Data Acquisition, Project Assessment and Oversight, and Data Validation and Usability. Five amendments to the QAPjP have been submitted to the US EPA:

QAPjP Amendment	Date	Sampling Location
1	April 5, 2000	Mill 1, 2, 3, 4, 5, and 9, #1 and #2 Storehouse, #1 and #2 Wing
2	May 26, 2000	Proposed Courtyard Area
3	September 19, 2000	#1 Wing Basement
4	February 13, 2001	Groundwater and Soil Sampling
5	May 24, 2001	Additional Sampling in Mill 4

Detailed descriptions of sampling and analytical methods are included in the QAPjP and respective Amendments.

1.3.1 Mill 1

Soil samples collected from the basement of Mill 1 were found to contain metals and semi-volatile organic compounds (SVOCs) at concentrations that exceeded the DEP adult worker remedial action guideline and the EPA ingestion/inhalation concentration. Arsenic was reported at 9.5 mg/kg and chromium was reported at 927 mg/kg, which exceeded the US EPA ingestion/inhalation concentration of 0.4 mg/kg and 390 mg/kg, respectively. Lead was reported at 5,750 mg/kg, which exceeded the US EPA ingestion/inhalation concentration of 400 mg/kg and the DEP adult worker remedial guideline concentration of 700 mg/kg. Mercury was reported at 1,180 mg/kg, which exceeded the DEP adult worker remedial guideline concentration of 610 mg/kg. Zinc was reported at 3,380 mg/kg, which exceed the DEP adult worker remedial guideline concentration of 1,500 mg/kg. Soils beneath wood floors in the basement of Mill 1 and in the adjacent alleyway between Mills 1 and 3 have been found to contain relatively high levels of volatile organic compounds (VOCs).

1.3.2 Mill 2

Soil samples collected beneath wood floors in Mill 2 were found to contain DRO at a concentration of 29,000 mg/kg. Samples from the floor of the dust chutes contained elevated levels of 2-Butanone (120 mg/kg) and DRO (13,000 mg/kg) as well as five SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoroanthracene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene) at concentrations that exceeded the DEP adult worker remedial action guideline. Samples from the storage room contained DRO at a concentration of 10,000 mg/kg, as well as seven SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoroanthracene, dibenzo(a,h)anthracene, benzo(k)fluoroanthene, chrysene, and indeno(1,2,3-cd)pyrene) at concentrations that exceeded the DEP adult worker remedial action guideline.

1.3.3 Mill 4

Soil samples reported a concentration of arsenic at 3.5 mg/kg, which exceed the US EPA ingestion soil screening level of 0.4 mg/kg. A water sample collected from the settling tank in the basement reported a total lead concentration of 13,400 µg/L. Samples of process chemical residues reported concentrations of lead at 463 mg/kg, which exceeds the US EPA ingestion soil screening level of 400 mg/kg.

1.3.4 Mill 5

Soil samples collected from the floor trenches of Mill 5 were found to contain moderately elevated concentrations of DRO (340 mg/kg) and low concentrations of SVOCs. No SVOCs were reported at concentrations above the DEP adult worker remedial action guidelines or the EPA ingestion/inhalation concentrations.

1.3.5 Mill 9

Samples from two floor sumps, located on either side of the chimney base, reported DRO at concentrations of 400 mg/L and 29,000 mg/L. Soil samples collected from floor trenches were found to contain elevated levels of metals, SVOCs, and/or DRO. Several metals and many SVOCs exceeded either the DEP or EPA soil screening standards. DRO was reported at 1,900 mg/kg. Arsenic was reported at 12 mg/kg, which exceeds the US EPA's ingestion standard for soils of 0.4 mg/kg. Lead was reported at a concentration of 410 mg/kg, which exceeds the US EPA screening level of 400 mg/kg. Zinc was reported at 1,820 mg/kg, which exceeds the DEP remedial action guidelines for contaminated soils at 1,500 mg/kg.

1.3.6 #1 Wing

Soil samples collected from the basement of #1 Wing were found to contain three SVOCs (benzo(a)anthracene, benzo(a)pyrene, and benzo(b)fluoranthene) at concentrations that exceeded the DEP adult worker remedial action guideline. PCB-1254 was reported present at a concentration of 1.1 mg/kg, which is slightly above the DEP's clean-up guidance level of 1.0 mg/kg.

1.3.7 #1 Storehouse

Oil samples collected from a metal lathe on the first floor and from electrical equipment on the north wall of the second and-a-half floor reported PCB-1254 at concentrations of 6.7 µg/kg and 27 µg/kg, respectively.

A sample of residue collected from a 1,000-gallon above ground storage tank located in the basement exceeded the US EPA inhalation/ingestion soil screening level for arsenic and exceeded the DEP adult worker remedial action guideline for total copper and total lead.

1.3.8 #2 Wing

Soil samples collected from the basement of #2 Wing were found to contain four SVOCs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and indeno(1,2,3-cd)pyrene) at concentrations that exceeded the DEP adult worker remedial action guideline. Laboratory results also reported DRO at a concentration of 2,100 mg/kg.

1.3.9 #2 Storehouse

Soil samples from this location did not report elevated concentrations of metals, SVOCs, VOCs, or DRO. No conditions were found that would require remedial action or further investigation.

1.4 STREAMLINED RISK EVALUATION

The streamlined human-health risk evaluation focused on direct contact with and incidental ingestion and inhalation of surface and subsurface soils at the various Sites by redevelopment workers and future occupants. Short-term exposures to soils by construction workers were evaluated to develop a measure of short-term effects during a potential response action or redevelopment activities.

1.4.1 Identification of Current and Reasonably Foreseeable Future Uses of the Site

The Mill Complex was constructed between 1852 and 1923 and originally consisted of 11 buildings. In its prime, the Mill employed more than 5,000 people and was one of the nation's largest manufacturers of textiles. Owners include the Bates Manufacturing Company, Bates Fabrics, inc. (1850-1992) and the City of Lewiston (1992–present). Before ownership by the City, these companies were primarily involved in the weaving and dyeing of cotton and wool textiles. Bates of Maine, Inc. used several buildings on the property until they ceased operations in 2001. Portions of the Complex are currently leased by various businesses.

The City of Lewiston has identified the improvement and accrual of green spaces as a high-priority issue in the current citywide redevelopment program. City planners have reviewed the current percentage of properly managed/maintained green spaces, paying particular attention to downtown areas, and have found opportunities for more improvements. A goal of the Bates Mill Redevelopment Plan is to provide employment for residents and thereby improve the standard of living within the community. The City recognized early on that redevelopment of the Bates Mill Complex would not occur until all environmental concerns were addressed. Their goal was to get a clean bill of health for the Complex to allow occupancy at any location in the Mill by any type of occupant.

1.4.2 Streamlined Human-Health Risk Evaluation

As discussed in Section 1.3, numerous samples collected throughout the Bates Mill Complex were found to contain metals and SVOCs. Refer to Appendix B for analytical data summaries.

DEP adult worker Remedial Action Guidelines for Contaminated Soils and 1996 EPA Soil Screening Levels for ingestion and inhalation were used in the selection of areas of potential concern for soils. The DEP Remedial Action Guidelines for contaminated soils established separately for a resident, trespasser, and adult worker exposure scenarios protective of human health by direct exposure. The concentration of each analyte in soils was compared to the selected risk screening values. To be conservative, if an analyte concentration was above the selected risk screening value, an unacceptable risk to human health would result from future exposure to impacted soils at the Sites. Results of this comparison for soils are presented in Tables 2 and 4 of Appendix B.

If a no response action is taken and redevelopment occurs, a future occupant could be exposed to contaminants in surface and subsurface soils within the footprint of the mill. During redevelopment activities, a construction worker may be exposed to contaminants in certain areas of the Complex. Consideration of this information suggests that exposure to soils at Mill 1, Mill 2, Mill 5, Mill 9, #1 Wing, #1 Storehouse, and #2 Wing pose a potential threat to human health and actions to reduce exposure are warranted and would be consistent with any future remedial action(s).

1.4.3 Streamlined Ecological Risk Evaluation

Characterization of potential ecological receptors within the Bates Mill Complex area was not performed because the remedial alternatives in this EE/CA address areas of contamination within the Bates Mill Complex.

2.0 IDENTIFICATION OF REMOVAL ACTION OBJECTIVES

This section presents the statutory limitations on removal actions, identifies the scope, goals and objectives for the performance of a NTCRA at the Bates Mill sites, and identifies potential

federal and state requirements with which the selected removal action must comply. A proposed NTCRA schedule is also presented in this section.

2.1 STATUTORY LIMITS ON NON-TIME CRITICAL REMOVAL ACTIONS

40 CFR Part 300.415(b)(5) and Section 104(c)(1) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) set limits of 12 months and $2 million for fund-financed removal actions. An exemption from the time and dollar limitations in the statute can be granted in situations where EPA determines that the proposed removal action is appropriate and consistent with the anticipated long-term remedial action. It is not anticipated that implementation of alternatives in this EE/CA will result in costs exceeding the NTCRA $2 million and 12-month statutory limit.

2.2 CONDITIONS THAT JUSTIFY A REMOVAL ACTION

Section 300.415(b)(2) of the NCP lists a number of factors for EPA to consider in determining whether site conditions indicate performance of a NTCRA is appropriate, including:

1) Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;

The presence of contaminated soil at eight of nine Sites in the Bates Mill Complex currently poses a limited exposure risk to humans since the Sites are relatively inaccessible to the public. However, redevelopment will significantly increase the exposure risk to workers and the public. Therefore, remediation is necessary before redevelopment occurs.

2) Actual or potential contamination of drinking water supplies or sensitive ecosystems;

Because most of the contamination at the Sites is protected from precipitation by roofs, ground water contamination generated from infiltration is unlikely. However, the depth of the contamination and water table at each Site is such that it is possible that contaminant leaching could be occurring where the contamination extends into or near ground water.

3) Hazardous substances or pollutants or contaminants in drums, barrels, tanks, or other bulk storage containers, that may pose a threat of release;

Caustic residuals located in railroad cars in Mill 4 will have to be removed as part of this action.

4) High levels of hazardous substances or pollutants or contaminants in soils, largely at or near the surface, that may migrate;

Seven of nine Sites are characterized by contaminated soil near the surface. This material has a high likelihood of being disturbed by redevelopment activities.

5) Weather conditions that may cause hazardous substances or pollutants or contaminant to migrate or be released;

Because of the indoor location of the Sites, it is unlikely that weather conditions will affect the mobility of contaminants.

6) Threat of fire or explosion;

Because the contamination consists primarily of metals and SVOCs in soil, the threat of fire or explosion is minimal.

7) The availability of other appropriate Federal or state response mechanisms to respond to the release.

The City has not identified any other potential Federal or State response mechanism to address this contamination. NO Potentially Responsible Parties are present to undertake actions.

8) Other situations or factors that may pose threats to public health or welfare of the U.S. or the environment.

Because extensive renovations of the Mill Complex are planned, threats to worker safety posed by the contamination must be removed before redevelopment can proceed and before the entire Mill complex can be made accessible to the public.

2.3 REMOVAL ACTION OBJECTIVES

The specific objectives of the removal action are to: 1) eliminate the risk posed by contaminated soil by eliminating the exposure pathway and 2) better define the extent of contaminated soil above the selected action or cleanup levels if necessary to determine remediation costs.

2.4 REMOVAL ACTION SCOPE

The removal action scope involves addressing the contamination identified at each of the above listed locations. The goal of the removal action is to mitigate risks posed to future worker safety by the contamination prior to redevelopment.

2.5 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Section 300.415(j) of the NCP requires that "Fund-financed removal actions under CERCLA Section 104 and removal actions pursuant to CERCLA Section 106, shall to the extent practicable considering the exigencies of the situation, attain Applicable or Relevant and Appropriate Requirements (ARARs) under federal and state environmental or facility siting laws."

ARARs are divided into the three categories, as listed below.

- Location-specific ARARs "set restrictions upon the concentration of hazardous substances or the conduct of activities solely because they are in special locations" (53 FR 51394). In determining the use of location-specific ARARs for selected remedial actions at CERCLA sites, one must investigate the jurisdictional prerequisites of each of the regulations. Basic definitions and exemptions must be analyzed on a site-specific basis to confirm the correct application of the requirements.
- Chemical-specific ARARs are usually health- or risk-based standards that limit the concentration of a chemical found in or discharged to the environment. They govern the extent of site remediation by providing either actual cleanup levels, or the basis for calculating such levels.
- Action-specific ARARs set controls or restrictions on particular kinds of activities related to the management of hazardous waste (53 FR 51437). Selection of a particular response action at a site will invoke the appropriate action-specific ARARs that may specify particular performance standards or technologies, as well as specific environmental levels for discharged or residual chemicals.

2.5.1 Location-specific ARARs

Location-specific ARARs are triggered by the presence of specific natural or manmade features or potentially affected resources at a disposal or cleanup site. Features and resources that can trigger location-specific ARARs include the following:

- seismic faults
- caves, salt domes, salt beds, and underground mines
- floodplains, wetlands, and water bodies
- sensitive ecosystems
- wilderness areas, wildlife refuges, wildlife resources, and scenic rivers
- rare, threatened, or endangered species
- archaeological resources and historic sites

Because the remedial alternatives address areas of contamination within the Bates Mill Complex, all alternatives identified for evaluation will not be affected by location-specific ARARs.

2.5.2 Chemical-specific ARARs

Environmental investigations have identified both soil and groundwater contamination at the Bates Mill Complex. Although this EE/CA proposes only soil removal actions, a key consideration in the assessment of chemical-specific ARARs is the fact that groundwater at the Site is potentially a drinking water supply. Protection of the drinking water aquifer is the primary driving force behind development of soil cleanup levels.

There are no maximum allowable concentrations for chemicals in soil under federal law; however, guidance to protect against adverse effects from direct contact exposure and to protect groundwater from contamination by leaching is available and was considered in this EE/CA.

2.5.3 Action-specific ARARs

A number of RCRA regulations pertain to handling, treatment, storage, and disposition of hazardous wastes.

The Maine Hazardous Waste Management Rules regulate treating, storing, and disposing of hazardous wastes. Other state regulations that pertain to solid waste, particulate emissions, and air pollution may need to be considered for the NTCRA.

Appendix C contains a summary of location-, chemical-, and action-specific ARARs for the removal alternatives evaluated in this EE/CA.

2.6 NON-TIME-CRITICAL REMOVAL ACTION SCHEDULE

The following schedule shows key administrative steps in the EE/CA process. The NCP requires a public comment period of 30 days following submittal of the EE/CA. An additional 30 days are given to respond to significant comments following the public comment period. The Action Memorandum is generally signed within 30 days following the response to comments.

Removal action contracting activities will be performed concurrently with the preparation of the Action memorandum. The schedule for completion of the removal actions is dependent upon the alternative selected.

Activity	Date
Issue EE/CA Approval Memorandum	September 19, 2002
Issue EE/CA	October 30, 2002
EE/CA Public Hearing and opening of Comment Period	November 21, 2002
Public Comment Period Ends	December 21, 2002
Sign Action Memorandum	December 2002
Award Removal Contracts	December 2002
Completion of Removal Actions	January 2003/February

3.0 IDENTIFICATION AND ANALYSIS OF REMOVAL ACTION ALTERNATIVES

This section presents an evaluation of the removal action alternatives. Pursuant to EPA guidance on EE/CAs, the remedial action alternatives are evaluated on the following basis: short-term and long-term effectiveness at removing contaminants or eliminating exposure pathways, implementability based on the location of the contamination within buildings at the mill complex, future use of each Site, and the alternative can achieve the goals within a reasonable time-frame and cost to allow redevelopment of the Sites. Appendix D contains cost estimates for the remedial alternatives evaluated.

3.1 APPROACH TO THE EVALUATION OF ALTERNATIVES

Each alternative is evaluated using the effectiveness, implementability, and cost criteria set forth in the NCP and EPA guidance on conducting EE/CA's as outlined below.

The effectiveness of each alternative is evaluated in accordance with the following criteria.

- Overall protection of human health and the environment
- Compliance with ARARs and other criteria, advisories, and guidance
- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, or volume through treatment
- Short-term effectiveness

Implementability addresses the technical and administrative feasibility of implementing the alternative and is evaluated in accordance with the following criteria:

- Technical feasibility
- Administrative feasibility
- Availability of services and materials
- State acceptance
- Community acceptance

A cost estimate was prepared for each alternative to help in selection of a removal action. Costs include expenditures for the equipment, labor, and materials necessary to prepare the Site and conduct the remedial alternative.

The evaluation of state and community acceptance will be addressed following regulatory and public review of this EE/CA.

3.2 COMMON ALTERNATIVES

All of the nine Sites have two alternatives in common: No Action and Institutional Controls. Descriptions of these alternatives are not repeated in the discussion of each site.

3.2.1 No Action

As required by the NCP, a No Action alternative was considered for the nine sites. The no action alternative provides a baseline for comparing other alternatives. Because no remedial activities would be implemented with the No Action alternative, risk posed by contaminated soils would be the same. The No Action alternative would not meet any ARARs. This alternative includes no controls for exposure and no long-term management measures. All current and potential future risks to redevelopment workers and occupants would remain the same under this alternative. The costs are estimated to $0 since there would be no action.

Because extensive renovations of the Bates Mill Complex are planned, the No Action alternative is not acceptable to the City of Lewiston. State and community acceptance will be addressed following regulatory and public review of this EE/CA.

3.2.2 Institutional Control

Use of institutional controls for the nine sites would include access restrictions to contaminated areas of the Bates Mill Complex. Since redevelopment of the Bates Mill Complex included areas that have been identified as impacted in the Phase II, current and potential future risks to redevelopment workers would remain the same under this alternative. The costs are estimated to be less than $5,000 to restrict access to contaminated areas within the Bates Mill Complex. Restricting access to redevelopment workers and future occupants is not acceptable to the City of Lewiston or LMRC.

3.3 REMOVAL ACTION ALTERNATIVES

3.3.1 Mill 1

Based upon the results of the Phase II assessments, the following environmental conditions require action:

- Soils in the basement beneath wood flooring
- Subsurface contamination in soils beneath Mill 1

In addition to evaluation of No Action and Institutional Controls alternatives, isolation of basement soils and encapsulation of subsurface soils in Mill 1 were evaluated.

3.3.1.1 Isolation of Basement Soils

Soil samples collected from the basement of Mill 1 were found to contain metals and SVOCs at concentrations that exceeded the DEP adult worker remedial action guideline and the EPA ingestion/inhalation soil screening levels. The remedial alternative of isolation was evaluated. Repairing the wood floor in areas where the floor is missing or damaged is a practical means of reducing the potential for exposure to the contaminants present in the sub-floor sediments.

Effectiveness

Isolation is an effective remedial technology for metal and SVOC contamination in soil, especially for low volumes of shallow soil. Isolation provides protection to human health by

Effectiveness

Removal of caustic residue is an effective remedial technology for reducing the risk of exposure to redevelopment construction workers and future occupants.

Implementability

The removal of residue caustic can be readily implemented at this Site. The necessary equipment and labor for this task are readily available. Personal protective equipment can reduce the potential risk or worker exposure to the contaminants.

Cost

The estimated total cost to remove the caustic residue and railroad cars from the basement of Mill 4 is $17,200. Table 1 summarizes the estimated cost breakdown.

3.3.3.2 Encapsulation of Soils In Basement

Soil samples collected from the basement were found to contain arsenic at concentrations that exceeded the EPA's soil ingestion screening level. As a result, the remedial alternative evaluated for the soil/sediment in this area was encapsulation as a means of protecting against future potential exposures. Encapsulation by pouring a concrete floor would also allow the floor trenches to be filled in, eliminating a potential flow route to the cross canal system. To prepare for placement of the new floor the concrete settling tanks should be removed from the building.

Effectiveness

Encapsulation is an effective remedial technology for metal contamination in soil.

Implementability

Encapsulation can be readily implemented at this Site. The necessary equipment and labor for this task are readily available. Personal protective equipment can eliminate or reduce the potential risk or worker exposure to the contaminants. To prepare for placement of the new floor the concrete settling tanks should be removed from the building.

Cost

The estimated total cost to encapsulate basement soils of Mill 4 is $25,300. Table 1 summarizes the estimated cost breakdown.

3.3.4 Mill 5

Soil samples collected from the floor trenches in Mill 5 were found to contain moderately elevated concentrations of DRO and low concentrations of SVOCs. Two remedial alternatives have the potential to achieve the removal action goals for soils/sediments in the ground floor trenches at Mill 5: 1) encapsulate soils/sediments in place and/or 2) remove soils/sediments from the floor trenches. Removal of soils/sediments from the floor trenches was evaluated if the floor trenches are to be used as drainage structures in the future. If the trenches will not be used in the future then encapsulation was evaluated.

3.3.4.1 Encapsulation of Soils/Sediment in Floor Trenches

Effectiveness

Encapsulation is an effective remedial technology for DRO and SVOC contamination in soil.

Implementability

Encapsulation can be readily implemented at this Site. The necessary equipment and labor for this task are readily available. Personal protective equipment can eliminate or reduce the potential risk or worker exposure to the contaminants.

Cost

The estimated total cost to encapsulate floor trench soils/sediments is $4,500. Table 1 summarizes the estimated cost breakdown.

3.3.4.2 Removal of Soils/sediment from Floor trenches

Effectiveness

Soil removal is an effective remedial technology for DRO and SVOC contamination in soil, especially for low volumes of shallow soil located in the vadose zone. It can provide rapid and permanent cleanup of contaminant source areas.

The type of subsurface soils generally do not limit the effectiveness of excavation, and treatment/disposal facilities exist that can effectively destroy, extract, or dispose of the contaminants.

Implementability

The necessary equipment and labor for soil extraction and off-site treatment/disposal are readily available.

Migration of contamination during excavation can be effectively controlled using standard construction practices and site controls. Personal protective equipment can eliminate or reduce the potential risk or worker exposure to the contaminants.

Cost

An estimated 10 cubic yards of sediments will be disposed in a landfill licensed to accept this material. Removal of sediments and cleaning of the floor trenches will be completed using steam washers and a vacuum unit.

The estimated total cost to remove floor trench soils/sediments and decontaminate the floor trenches is $6,700. Table 1 summarizes the estimated cost breakdown.

3.3.5 Mill 9

Based upon the results of the Phase II assessments, the following environmental conditions require action:

- Condensate water and sediments
- Floor trench sediments

In addition to evaluation of No Action and Institutional Controls alternatives, removal of condensate water/sediments and encapsulation or excavation of floor trench sediments were evaluated.

3.3.5.1 Condensate Sumps Water/Sediments

Samples of water from two condensate sumps, located on either side of the chimney base, reported elevated levels of DRO. It is likely that sediments in these sumps are contaminated. The sumps reportedly discharge to the municipal sanitary sewer system. Removing water and

Table 5 Evaluation of Mill 5 Remedial Alternatives

Evaluation Criteria	Remedial Alternative			
	No Action	Institutional Controls	Excavation	Encapsulation
Mill 5 Floor Trenches				
Effectiveness				
Overall Protectiveness of Human Health and the Environment	No significant reduction in risk to redevelopment workers or future occupants.	No significant reduction in risk to redevelopment workers.	Removal of soils/sediments eliminates the direct contact risk and soil ingestion risk.	Encapsulating soils reduces direct contact risk and soil ingestion risk.
Complies with ARARs	Would not meet ARARs since there will be no action.	Would not meet DEP or EPA soil ingestion/inhalation guidelines during redevelopment of the area.	Protects against soil ingestion and inhalation for redevelopment workers and future occupants.	Protects against soil ingestion and inhalation for redevelopment workers and future occupants.
Long-Term Effectiveness and Permanence	Source has not been removed. Existing risk will remain.	Source has not been removed. Existing risk will remain.	Risk reduction is permanent through soil/sediment removal.	Risk eliminated as long as concrete floor is maintained. Because source is only contained, inherent hazard of contaminated soils still remains.
Reduction of Toxicity, Mobility, or Volume through Treatment	None	None	Mobility of contaminants is reduced. Off-site treatment and disposal reduces toxicity.	None
Short-Term Effectiveness	Risk to Community is not increased, but risk to redevelopment worker remains the same.	Risk to Community is not increased, but risk to redevelopment worker remains the same.	Risk to Community and redevelopment worker is not increased.	Risk to Community and redevelopment worker is not increased.

Table 5 Evaluation of Mill 5 Remedial Alternatives (continued)

Evaluation Criteria	Remedial Alternative			
	No Action	Institutional Controls	Excavation	Encapsulation
Mill 5 Floor Trenches				
Implementability				
Technical Feasibility	No construction or operation.	No construction or operation.	Excavation is easily implemented.	Simple to construct.
Availability of Equipment, Personnel and Services	None Required	Signs and locks are readily available.	Readily available.	Readily available.
Administrative Feasibility	No approval necessary.		No approval necessary.	No approval necessary.
Cost	$0	<$5,000	$6,700	$4,500

concentration of arsenic at 3.5 mg/kg, which exceed the US EPA ingestion soil screening level of 0.4 mg/kg. Results of a water sample collected from the settling tank in the basement reported a total lead concentration of 13,400 µg/L. Samples of process chemical residues reported concentrations of lead at 463 mg/kg, which exceeds the US EPA ingestion soil screening level of 400 mg/kg.

Mill 5 From a letter to EPA on a clean up plan

A composite soil sample collected from the floor trenches of Mill 5 was found to contain moderately elevated concentrations of DRO (340 mg/kg) and metals and SVOCs at low concentrations. Arsenic was reported at 27.5 mg/kg, which exceeds the US EPA's ingestion standard for soils of 0.4 mg/kg. No SVOCs were reported above the MEDEP adult worker remedial action guidelines or the USEPA ingestion/inhalation concentrations.

Mill 9

Samples from two catch basins, located on either side of the chimney base, reported elevated levels of DRO at concentrations of 2,400 mg/L and 29,000 mg/L. A composites soil sample collected from floor trenches was found to contain elevated levels of metals and DRO. DRO was reported at 1,900 mg/kg. Arsenic was reported at 12 mg/kg, which exceeds the US EPA's ingestion standard for soils of 0.4 mg/kg. Lead was reported at a concentration of 410 mg/kg, which slightly exceeds the US EPA screening level of 400 mg/kg. Zinc was reported at 1,820 mg/kg, which exceeds the MEDEP remedial action guidelines for contaminated soils at 1,500 mg/kg.

#1 Wing

Soil samples collected from the basement of #1 Wing were found to contain SVOCs (benzo(a)anthracene (2.3 mg/kg), benzo(a)pyrene (2.0 mg/kg), and benzo(b)fluoranthene(2.9 mg/kg)) at concentrations that exceeded the MEDEP adult worker remedial action guideline. PCB-1254 was reported present at a concentration of 1.1 mg/kg, which is above the MEDEP's clean-up guidance level of 1.0 mg/kg.

#1 Storehouse

Oil samples collected from a metal lathe on the first floor and from electrical equipment on the north wall of the second and-a-half floor reported PCB-1254 at concentrations of 6.7 µg/kg and 27 µg/kg, respectively. A sample of residue collected from a 1,000-gallon above ground storage tank located in the basement exceeded the US EPA inhalation/ingestion soil screening level for arsenic and exceeded the MEDEP adult worker remedial action guideline for total copper and total lead.

#2 Wing

Soil samples collected from the basement of #2 Wing were found to contain SVOCs (benzo(a)anthracene (2.3 mg/kg), benzo(a)pyrene (2.3 mg/kg), benzo(b)fluoranthene (3.2 mg/kg), and indeno(1,2,3-cd)pyrene (1.8 mg/kg)) at concentrations that exceeded the MEDEP adult worker remedial action guideline. Laboratory results reported DRO at a low level of 2,100 mg/kg.

#2 Storehouse

No conditions were found that would require remedial action or further investigation.

b. Primary Risk Screening. Soil analytical results from the Sites were evaluated using MEDEP Remedial Action Guidelines (Adult Worker criteria) and US EPA Soil Screening Levels.

Mill 4: Remove Concrete Settling Tanks

Debris - roll-off	2@	$575.00	$1,050.00
Disposal	20 ton@	$75.00	$1,500.00
Labor	32 Hrs@	$125.00	$4,000.00
			6,550.00
Contingency		0.20	$1,310.00
			$7,860.00
		Total	**$7,800.00**

Mill 4: Basement Flooring

125' x 75' = 9500 ft^2
4' slab = 120 CY

Disposal	120 CY@	$75.00	$9,000.00
Pump truck	2 days@	$1,200.00	$2,400.00
Stand-by			$1,000.00
Labor	20 Hrs@	$125.00	$2,500.00
			$14,900.00
Contingency		0.20	$2,980.00
			$17,880.00
		Total	**$17,500.00**

Mill 5: Floor Trench Sediment Removal

Trucking			$1,000.00
Disposal	7.5 ton@	$75.00	$565.00
Labor	32 Hrs@	$125.00	$4,000.00
			5,565.00
Contingency		0.20	$1,113.00
			$6,678.00
		Total	**$6,700.00**

Mill 5: Floor Trench Sediment Encapsulation

Concrete	24 CY	$75.00	$1,800.00
Labor	8 Hrs@	$125.00	$1000.00
Skid Steer			$750.00
Truck Stand-by			$250.00
			$3,800.00
Contingency		0.20	$760.00
			$4,560.00
		Total	**$4,500.00**