CLOSURE EXPENSE MEMO

TO:

Kelly Webster

FROM:

Janet Gorman

DATE:

August 21, 2014

RE:

Project Status in SSTS/Notice of Site Closure

SITE:

Spill#

Spill Name/Town

A-157-2005

Commerce Center/Winthrop

Kelly-

Just wanted to let you know that this site has been officially closed by Tech Services. All of the invoices that Tech Services was responsible for, have been paid under account code <u>014-06A-1517-442</u>.

Let me know if you should have any questions.

Thanks, Janet

STATE OF MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION



PAUL R. LEPAGE

PATRICIA W. AHO

August 11, 2014

Certified Mail 7011 1150 0001 7046 7562

Winthrop Commerce Center Attn: Mr. Lou Carrier 162 Main Street P.O. Box 333 Winthrop, ME 04364

Re: Site closure: Winthrop Commerce Center, 149 Main Street, Winthrop, ME 04364

Spill # A-157-2005

Dear Mr. Carrier:

This letter is to inform you that the petroleum discharge at the above-referenced property has been remediated to the satisfaction of the Commissioner of the Department of Environmental Protection in accordance with 38 MRSA §548. Using the Department's Remediation Guidelines for Petroleum Contaminated Sites in Maine (2009), we conclude that the health risks have been adequately mitigated based on current site conditions and uses. No further remedial actions are planned at this time and the site has been taken off the Department's Long-term Petroleum Remediation Priority List.

The Department reserves the right to require or undertake further investigation and remedial action if the site condition changes or new information is discovered. New information regarding site hydrology and geology, of the effectiveness of the remedial measures or changes in land use may warrant a reassessment of the health risk associated with the discharge.

That further clean up actions are not necessary at this time does not absolve any responsible party of liability under 38 MRSA §552 or §570 if additional measures are found to be needed in the future. Responsible parties can pursue a liability waiver from the State of Maine by pursuing comprehensive investigation and remedial action under the *Voluntary Response Action Program*, 38 M.R.S.A. § 343-E (VRAP). For further information, please call VRAP staff at (207) 287-2651.

Please retain a copy of this letter in your records. A complete record of the remedial actions taken at the property is available from the Department.

If you have any questions or concerns, please call Danielle Obery at (207) 485-8368

Sincerely,

Janet Gorman, Environmental Technician
Department of Environmental Protection
Bureau of Remediation & Waste Management

Cc:

AUGUSTA 17 STATE HOUSE STATION AUGUSTA, MAINE 04333-0017 (207) 287-7688 FAX: (207) 287-7826 RAY BLDG., HOSPITAL ST.

BANGOR 106 HOGAN ROAD, SUITE 6 BANGOR, MAINE 04401 (207) 941-4570 FAX: (207) 941-4584 PORTLAND 312 CANCO ROAD PORTLAND, MAINE 04103 (207) 822-6300 FAX: (207) 822-6303 PRESQUE ISLE 1235 CENTRAL DRIVE, SKYWAY PARK PRESQUE ISLE, MAINE 04679-2094 (207) 764-0477 FAX: (207) 760-3143

SENDER: COMPLETE THIS SECTION	NC	COMPLETE THIS SECTION ON DELIVERY
 Complete Items 1, 2, and 3. Also or item 4 if Restricted Delivery is desirent 4 if Restricted Delivery is desirent 4 if Restricted Delivery is desirent 5. Print your name and address on the so that we can return the card to your Attach this card to the back of the or on the front if space permits. Article Addressed to: 	red. 9 reverse ou.	A. Signature Agent Addressee B. Received by (Printed Name) C. Date of Delivery D. Is delivery address different from item 1? Yes
Winthrop Commerce Attn: Mr. Lou Carrier 162 Main Street P O Box 333 Winthrop, ME 04364		If YES, enter delivery address below: No 3. Service Type
Article Number (Transfer from service label)	7011 1:	150 0001 7046 7562
S Form 3811, February 2004	Domestic Re	turn Receipt 102595-02-M-1540

Site Closi	ure Form		ME DEP T	echnical Services		Spill #	
Fingerprin	nts					Site Name	Winthrop Commerce Cent
ACL	Updater					Town	Winthrop
ACL	Engineer	2.0	Priority List	Score		Update	Jul 06, 07
TJB	Manager	327	Highest Prio	rity List Rank		First Listed	Jul 06, 07
JEB	Geologist					EGAD	27826
PJB	OHMS .		Site Closed		•	GIS-UTM	422574, 4906383
Remedial St						Adjustments	
Remediat	tion, includes investigation	& mo	nitoring				Major contamination is gasoline
Source ·			 				Significant sand and gravel aquifer
UST Faci	lity					X	Recoverable free product (x2)
							Vapor exposure hazards (x4)
	•						
Comments							
Comments	_						
Remediation	a Guidalinas						
Kemedianor	Guidetines					_	
Water Supp	lies-Contamina Units		# Of Units	Dependency		Score	Comments
water buppi	nes comamna omis		ii oj oniis	Берениенсу		Score	Comments
Water Supp	lies-At Risk Units		# Of Units	Dependency	Risk	Score	Comments
Closure Red	isons		Decommision	n			Closure letters sent to:
	Targets met			4 clean quarte	rs	_	RP - green receipt date
	Limits of technology			Number of rep	lacement w	ells	Insurance claimant
	Limits of cost effectiveness			Drinking water	wells aba	ndoned	Landowner
				Monitoring we	lls abando	ned	Municipality
	Management of risk to groundwa	ter		QM discontinu	ed		Resident
	Management of vapor risk						Neighbors
	Institutional controls recommend	led		Water treatmen	nt system r	emoved	File
	Passed to VRAP			P.O.E. remove	d/purchase	rd	3PD Claim Unit
				Vapor treatmen	nt removea	!	SSTS
				Site work comp	oleted		
				All invoices pa	id		
Closure file				=			,
	Analytical data in EGAD						~
Sample Poir	nts in EGAD: 24 in GIS: 55 Linked		i				
	Project files culled and organized						
•	Electronic files, photos, maps mo	ved to	File Room fol	der			v

PM Signoff for closure

Closure memo complete
Closure memo and form files

Site Closure Form ME DEP Technical Services Spill # A-157-05

Closer

Closure letters, Memo and Form complete

Closure etters, Memo and Form sent to File Room

Contacts				
OTHER CONTACT				ME
OTHER CONTACT		BENJAMIN MURRAY	432 CONY RD, PO BOX	(· AUGUSTA, ME 04330
OTHER CONTACT		BRIAN FONS	155-F LEWISTON ROA	D GRAY, ME 04039
OTHER CONTACT		DANIEL BURNELL	139 CASH ST, PO BOX	2 SOUTH PORTLAND, ME 04106
OTHER CONTACT		JOHN & JULIE HAEFEL	1 PO BOX 99	WINTHROP, ME 04364
OTHER CONTACT		PAUL MASON		AUGUSTA, ME 04330
OTHER CONTACT		RICH CAMPBELL	173 GRAY ROAD	FALMOUTH, ME 04105
OTHER CONTACT		RONNIE TILLSON	PO BOX 1568	LEWISTON, ME 04241
OTHER CONTACT		WENDY DENNIS	MAIN ST	WINTHROP, ME 04364
REPORTER				ME
SUBJECT/SPILLER	RP=YES		162 MAIN ST, PO BOX	3 WINTHROP, ME 04364

BRWM Petroleum Program Priority List Site Closure Memo

To: Pro	oject File	Date: June 13, 2014
Project	Name: Winthrop Commerce Center	Spill No.: A-157-2005
Town:	Winthrop	
Project	Manager: Tom Benn	Closer: Dani Obery
Summa 1.	•	ng from pre-1990 bare steel UST from Winthrop
2.	Receptors & exposure routes: Mill Stream	m and Lake Annabessacook.
3.	Carlton Woolen Mills in Winthrop and so Lake Annabessacook. The lake was part lake was exposed to floating oil, which in	In 2005, #6 fuel oil had been trapped under the former eeped into Mill Stream and washed down stream to tially ice covered so only the northern portion of the included the Haefele residence. The Haefele's have impacts for impacts to their shoreline and residence.
4.	Applicable DEP Remediation Guidelines	s (check all that did apply):
	Free product/LNAPL Dil saturated soil Heating oil response nking/Groundwater Protection Tier 1, Drinking groundwater (Table 1) Tier 1, Soil leaching to groundwater (Table 3 Tier 2, Modeling of leaching to groundwater Tier 3, Dept-approved site specific guidelines	Indoor Air & Vapor Intrusion Guidelines Remediation of obvious exposure to vapors Vapor intrusion evaluation needed
	Variation from guidelines?	Yes X No
5.	Measures taken: See attached summary.	
6.		e: All contamination has been removed, two building alled, and areas paved to prevent precipitation into the
7	On-going treatment systems. None	

BRWM Petroleum Program Priority List Site Closure Memo

Summary and site plan attached.

More photos can be found at: <u>H:\BRWM\Tech Services Division\Geology Unit\Winthrop Photos\Presentation JEB</u>

Winthop Commune Center A-157-05

Spill Report Narrative

On Saturday 4-9-05, about 0900 hrs. the Winthrop Police Dept. reported that an oil spill had been discovered on Lake Annabessaceok-in Winthrop. John & Julie Haefele, property owners along the northeast shore had discovered oil on their dogs.

Responder Glen Wall made a site visit where the stream crosses beneath Route 202 and found some black oil along the shore. The Haefele's told Glen what they had found. Glen went to the Police Dept. and spoke w/ the dispatcher, a fire fighter and a police officer. A police officer had checked the area and smelled petroleum odors along the stream adjacent to the former Carleton Woolen mill, in the area of Mechanic Street. A public official (Fire or Police) then called Lou Carrier, a part owner of the former mill. Glen met Mr. Carrier and headed for the mill. Mr. Carrier unlocked the door and Mr. Carrier, Glen, and a fire fighter toured the mill looking for any obvious oil spills. No obvious spill was found. A large AST located outside the buildings, had been cleaned and dismantled about a year ago. This area was checked by the group, but no source was found. At approx. 10:15 Glen Wall called EPI, an environmental contractor, to help assist in clean up and early remedial actions. At 11:30 the DEP supervisor on call, Peter Blanchard, was called and informed of the situation. Peter arrived on site and a shoreline survey was performed to determine the extent of the spill. The oil was along the north and northeast shoreline. The ice was just beginning to melt on the lake. An area of open water about 5 acres in size was visible. The oil was mostly contained along the shore line of this open area. Maine Dept Inland Fisheries and Wildlife was contacted, and Rich Dressler arrived the next morning to survey the area. No impacted wildlife were collected or observed.

EPI, the main contractor, and their subs worked on containing the oil in the open area of the lake and removal of the thick black oil from along the shore. This clean up activity continued through out the weekend and steady for the next two work weeks. DEP made many site trips to check the progress of the cleanup.

DEP focused its efforts on determining the source of the leak/spill. Staff interviewed former workers of the Carlton Woolen Mill to gain anecdotal knowledge of the use and storage of #6 oil. Hartley Palleski, Larry Gurette, Lawrence Stanley, and Waldo Bubier were contacted and discussed what they remembered. They all remembered that the underground tank system leaked, and that was the reason the tank was abandoned. We collected a sample of the spilled oil 4/12/2005, (results attached). The underground tanks database was searched for possible sources. The mill was inspected again. DEP hired EPI to bore two holes thru the concrete floor in the boiler room of the mill. There was no indication of oil in these two borings, however, the recovery in the sandy material was poor, so the results were considered inconclusive at depth. A catch basin survey was completed around Mill stream to assess whether any oil had been intentionally dumped, or may have found its way into the stream via a drainage. Cobbossee Watershed District shared a copy of a catch basin evaluation done for the Town of Winthrop (by Acheron Associates dated 1992) with a map of known catch basins. We walked the shorelines of Mill stream above and below the mill, and walked along surface drainage ditches which lead to mill stream. No sources of oil were found leaving us more inclined to suspect the underground tank system at the mill.

A part of the concrete floor in the mill boiler room was removed to access the UST. An access hole in the tank was cut with a Saws-All and inspected. The tank had previously been cleaned and partially filled with sand. The contractor dug thru this sand to observe the bottom of the tank. There was no obvious indication of petroleum. After the heavy rains that we experienced throughout the month of May, DEP was finally able to walk the stream which actually goes under the Mill and terminates at a dam at Main St. No obvious sources of oil were observed beneath the mill. On 5-27-05 DEP found black #6 oil leaching out of the ground next to the boiler room. See photos attached. It appeared that heavy rains mobilized the oil from soil around and under the Boiler room. A sample of this oil was taken to HETL for analysis, results also attached. The mill owners were reluctant to admit that the oil source was from their property. To complicate matters, a bass fish kill occurred in Annabessacook lake, and was reported in the Kennebec Journal. It was suspected by biologists that the bass died as a result of a virus, not associated with the oil spill. (See article dated 5/25/05 attached)

To further isolate the source of the oil, sorbent boom was staged upstream of the mill on the other side of Main St. Sorbent boom was also staged along the outside wall of the boiler room foundation where sheening and stained sludge had been observed. On 5-31-05 the boom was collected and samples of stained material was submitted for laboratory analysis. The samples from above the mill did not contain PAH compounds found in the samples from boom and stained sludge from outside the boiler room. The boom from outside the boiler room, stained sludge from outside the boiler room along mill stream, and neat oil collected downstream during the initial spill reported in April all contained the PAHs associated with heavy heating oil.

Glen made a site visit on 6-9-05, to collect what was reported as oil from Mill Stream. Mr. Carrier thought he saw oil floating on the water upstream of the former Carlton Woolen Mill. This material did not have a petroleum odor and did not have the color of #6 oil. Glen collected a sample of the scum floating on the water and a sample of the leaves and debris. This material was analyzed by HETL and it was later determined not to be #6 oil. To protect the lake, the boom was left in place to intecept any oil moving downstream. Spot checks were made in July to assess the condition of the boom and shorline of Mill stream.

On August 5 a heavy rain shower occurred and a site visit was made by Peter to assess the conditions at the site. Heavy sheening was observed on both sides of the Mill stream culvert which runs beneath Route 202. No signs of oil were observed outside the boom or along the shoreline of Haefele's property (other than halo of dried black oil on trees from the April event). Along Morton St. side of Mill Stream there was light sheen on the rocks. An osprey was observed taking a fish. On Main St. Winthrop there was no sign of oil above the dam. Mill Property was not accessed.

On 8/18/05 DEP issued a letter to the Winthrop Commerce Center Partners (attached) finding the source of the oil to be from the mill, and directing the Partners to submit a remediation plan.

On 8/20/05 DEP addressed the Annabessacook Lake Association to present a summary of the cleanup work which had been conducted, and what future action would be undertaken. The Department pledged to find the source of the oil and ensure that it is controlled. Several residents described oil sheen in the lake, but for the most part were supportive of DEP's efforts.

On 9/1/05 Campbell Environmental Group submitted an investigation work plan on behalf of the Winthrop Commerce Center Partners. The plan was submitted in response to the DEP letter of 8/18/05.

On 9/2/05 Winthrop Commerce Center submitted an application for Groundwater-Oil—Cleanup Fund coverage.

On 9/7/05 Steve Davis as authorized by Commissioner Dawn Gallahger approved Winthrop Commerce Center application for Fund coverage, including clean up costs for the the 4/9/2005 spill to Mill Stream and Annabessacook Lake.

Senator John Martin of Eagle Lake is a partner at Winthrop Commerce Center. He is also co-chairman of the Energy and Natural Resources committee in the legislature that creates legislation concerning DEP and other natural resource agencies.

Previous policy and practice at Maine DEP was that bare steel tanks older than 1990 were not eligible for Fund coverage.

Dawn Gallahger and Steve Davis no longer work for Maine DEP.

Other work in September, 2005: DEP met on site with representatives from Campbell Environmental Group, EPI, and the mill owners to determine the most effective way to investigate the source of the spill and prevent future occurance. A records review of the mill and fire insurance (Sanborn maps) was planned to locate details of underground tanks or piping. Borings were planned to determine the size and location of a plume of contamination around the suspected Boiler building and former above ground storage tank area. A survey beneath the mill was performed to search for oil discharges, penetrations for pipes, cracks, seeps etc... where oil may have entered the stream. Preliminary discussions were made on the necessity of hiring a structural engineering firm to assess the integrity of the brick buildings and 180' tall chimney next to the Boiler Room. Other strategies to prevent oil contamination from impacting the Mill Stream were discussed including maintenance of the boom. Ben Murray, of E.S. Coffin Engineering & Surveying Inc. of Augusta was hired to assess the project layout and develop a scope of work. The boom in Annabessacook lake was removed and cleaned. A new series of floating plastic hard boom was installed in Mill Stream set in a pattern to deflect any floating residual oil toward shore for collection. (See photos attached) A Mycelx sorbent product was tried in the stream. This product reportedly is designed for collection of rainbow sheen but met with limited success. Heavy fall rains shredded the Mycelx sorbent and it was later collected downstream caught in the hard boom. Estimates were obtained from Cote Crane in Auburn and McGee Construction in Gardiner to rig and remove the 750 hp boiler from the boiler room. The boiler had to be moved to allow borings and the expected excavation of the underground tank. Northeast Mechanical was hired for expertise to advise how to drain the oil and boiler treatment chemcials from the defunct boiler. Inside the boiler room contained steel stairways, scafolding, piping and electrical, as well as sprinkler lines. These all would require draining and removal to ensure adequate space for investigation. Cabinets within the boiler room also contained lobby stock parts, chemical cleaners, paints, tools, and

miscelaneous papers related to job safety and SOPs. These had to be sorted and removed for disposal.

October 2005: DEP hired EPI to remove the caustic boiler chemicals and other inventory in the building. Morrissey Environmental of Auburn was hired to test for and remove asbestos in preparation for boiler removal. Mercury switches were located and removed. Drums and containers were characterized for disposal and removed. Piping was disconnected and drained. Northeast Mechanical and Cote Crane met on site and planned the removal of the 56,000 lb. boiler. The removal was completed on 10/24 and sold for re-use by Winthrop Commerce Center. E.S. Coffin assessed the impact of the borings and approved proceeding with the investigation. The stream boom was maintained and cleaned.

November 2005: Campbell Environmental oversaw drilling of several borings in and around the boiler room building, pump house, and former above ground storage tank area. A special vibratory rock driller operated by Maher Drilling and Pump Services from No. Reading Mass. was used to core through the dense fill. Heavy rains caused some delay in mobilization and in implementing this work. E.S. Coffin met with DEP and EPI reps to discuss the structural implications of removal of the concrete floor slab inside the boiler building. Coffin issued a letter approving the removal of the concrete subject to inspections during the work. Preliminary results from the borings indicate contamination is near bedrock approx. 17 feet below ground surface in the vicinity of the underground tank and inside the footprint of the boiler room building. No significant contamination was found near the chimney or former above ground tanks. EPI worked with excavator mounted jackhammer (hoe-ram) to break up the concrete slab inside the boiler room building. Several layers of concrete floor were encountered as were concrete post structures that likely supported heavy equipment in the past.

December 2005: Demolition inside the building moved slowly. The excavation and vibration of the hoe ram was shaking the entire structure. The concrete was old and hard, and the rebar was thick. Piping runs were found and some evidence of oil leakage was observed. Demolition work stopped when it was determined that from a safety position, the building would have to be torn down. E.S. Coffin submitted an opinion discussing the structural implications of demolishing the building. Discussions were started with the owners on how this would impact the redevelopment plan. The adjacent room that housed the main electrical transformer bank would also be demolished, as would the brick pump house building. These structures were evaluated for hazardous materials and asbestos by Morrissey Environmental. Electrical equipment would have to be tested for PCBs and removed. The electrical would have to be removed for the redevelopment, however, the demolition of the room would require that a new entrance be cut through a concrete wall. The cutting was arranged. Cost eligibility for the Fund insurance was discussed and planned with the 3rd party damage claims unit. Boom in Mill stream was inspected and cleaned.

January 2006: Agreement was ultimately reached with the mill partners on how the building would be torn down, and what costs would be covered and which could not.

Campbell Environmental submitted their final subsurface investigation report with pictures, tables, and diagrams of the findings. (attached) Central Maine Power removed the electrical switch gear from the electrical room. Power was re routed to the new electrical room.

February 2006: Demolition on tearing down the building began again. Soil samples of the contamination were taken and analyzed for disposal. The samples had to be characterized because of the many years of industrial activity on site. It was unclear whether the soil would contain other contaminants besides oil. Northeast Labs in Winslow conducted the analysis for heavy metals, volatile organic compounds, semi volatile organic compounds, corrosivity, reactivity, PCBs and pesticides. No contaminants other than petroleum were found. (see attached analysis). The roof was torn off and the large steel girders were taken down. These were salvaged by the Winthrop Commerce Center Partners for reuse or resale.

March 2006: Demolition of the building continued. The underground storage tank was uncovered. The tank was ripped from the ground in a battle of giants between the stubborn 20,000 gallon heavy duty steel tank taking on the tired but capable Daewoo excavator. It took a few extra quarts of hydraulic fluid, but the old girl finally pulled the tank free. Evidence of pitting and holes were documented in the rusted tank. Additional soil samples were obtained as the volume of soil and debris removed from the excavation increased beyond 250 tons. These samples too confirmed the absence of hazardous constituents beyond oil. The soil was a black silty wet clay with metal, wood, fire brick and other debris that made it wholely unsuitable for any re-use. Pine Tree Landfill in Hampden took all the contaminated demo debris and soil. Brick was stockpiled off site for re-use or resale by the mill owners. Non hazardous fill consisting of uncontaminated soil and rock was taken by local contractor for inert fill. In all 445 tons of contaminated soil was removed based on the weight receipts. A high power vactor truck was then used to remove the last soil/groundwater/oil in contact with bedrock at the base of the hole. Crushed rock and perforated pipe was installed against bedrock in the lowest part of the excavation with an idea if future extraction of groundwater would be necessary for testing or treatment. A flush mount cover was installed on top of a 12 inch PVC riser. Upon completion, clean backfill was returned and compacted. The boom in Mill stream was cleaned and maintained.

April 2006: The contamination being removed, the lot was graded and prepared for paving. The stone foundation along the Mill stream was repaired with a concrete cap. Gunite concrete was sprayed on the exterior of the remaining Boiler Room foundation wall along Mill Stream to repair cracking which resulted from the demolition process. The roof of the attached Electrical building was repaired with rubber roof and metal flashing. The paint on the exterior walls was tested for lead content. (results attached) In order to re-paint the exterior walls, the loose paint would have to be removed to prepare the surface. Morrissey Environmental provided an estimate for this work. Due to high lead content and resulting proposed expense, the mill owners decided not to proceed with lead abatement at this time. Holes in the brick walls were filled with mortar and patched

to restore to pre demolition conditions to the extent practicable. The boom in Mill stream was cleaned and maintained.

Summer 2006: The paving of the parking area was completed to prevent infiltration of precipitation into the affected area. The response oversight of the project being complete, the project was turned over to Tom Benn of the Bureau of Remediation. A railing needs to be installed on top of the concrete cap to match the existing pipe railing. Some oil sheening was observed in July from the area down stream of the boiler room. It is unclear why this is continuing to leach, but may be related to bedrock impacts. The boom will remain in Mill stream until this sheening is under control.

Discussion of the cause of the spill: In the course of investigating this incident, it was determined that the source of the heavy heating oil which impacted Mill Stream and Annabessacook lake was the underground tank system operated by Carlton Woolen Mill. The tank was installed in the 1960's in contact with coal ash and fill. In conjunction with groundwater, the ash produced a corrosive environment, and the tank and piping began to corrode and ultimately leak. The soil type encountered during excavation was wet silty clay with wood, metal, and concrete debris from years of industrial use. It is likely that a pocket of oil became trapped in the relatively impermeable subsurface soil beneath the boiler room. This thick oil would periodically leach to Mill stream by gravity probably during especially warm weather or heavy precipitation. Operation of the underground tank system ceased in the 1970's and two above ground storage tanks were put into service. The mill ceased o peration in 2003 and went unheated. This may have resulted in frost cracks in the foundation of the boiler room building. In April of 2005, heavy rains and snowmelt saturated the ground around the boiler room. In the mill building along Main St. and upgradient of the boiler room, a sprinkler system water pipe failed and flooded the floor with several inches of water causing additional hydrostatic pressure. In the small pump house building immediately adjacent to the Boiler room, a large diameter cast iron pipe cracked and leaked causing water to fill the basement of the pump house to approx. 4 feet depth. This further saturated the area around the underground tank and tank system. The roof of the Boiler room building also leaked allowing water to drain to the interior of the building and into the subsurface soil. All this water pressure likely built up and forced the pocket of oil out through cracks in the fieldstone foundation and into Mill Stream. A granite and wooden dam approx 75 feet downstream also failed in the high water of April, 2005. It is possible that some quantity of black oil was trapped in the sediment behind this dam and further contributed to the degradation downstream. Any such oil, however, was secondary in its impact as freshly oiled vegetation and rocks were observed and photographed upstream of the dam (exterior wall of boiler room).





