



Minnesota Pollution Control Agency

A Crude Oil In-Situ Burn in a Peat Bog

Enbridge Energy Company

July 4, 2002

Cohasset, Minnesota



★ Cohasset



Release: Discovery and Notifications

- 3:15 a.m.
- ▶ Enbridge personnel in Edmonton, Canada notice large pressure drop
 - ▶ Immediately act to shut down line
 - ▶ Identify release area between two pumping stations about 50 miles apart
 - ▶ Dispatch crews to locate release
- 7:45 a.m.
- ▶ Visually confirm release
 - ▶ Notify National Response Center, State Duty Officer and local responders

Release:

Site Conditions & Considerations

- ▶ Estimated volume loss: 6,000 barrels
(252,000 gal)
- ▶ Release area:
 - Peat bog surrounded by spruce forest
 - Bog drains to Blackwater Creek → Blackwater Lake
(*backwater area of the Mississippi River*)
 - Heavy equipment access to bog very difficult
- ▶ Weather forecast: heavy rain

Decision:

Allow In-situ Burn

- ▶ **Site conditions** make mechanically removing and/or containing product difficult
- ▶ **Heavy rain** in forecast increases the possibility of oil reaching Blackwater Creek (*and eventually Mississippi River*)
- ▶ Release **location remoteness** allows evacuation of citizens and protection of structures
- ▶ Minnesota **DNR planes available** to drop retardant on perimeter and to “fly cover”

Approval to Allow In-situ Burn

- ▶ Minnesota Pollution Control Agency, Minnesota Department of Natural Resources, and local Fire Chief
- ▶ Federal On Scene Coordinator, EPA, did not arrive until after the burn was initiated but did concur with the decision after the fact
- ▶ Regional Response Team (RRT) for Region 5 was not notified. By agreement, Region 5 states do not need RRT permission for in-situ burns. (Region 5 Area Plan, Appendix VIII.)



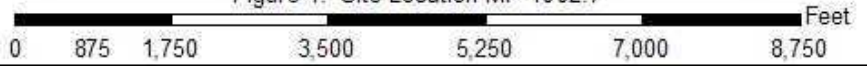
Legend

— Pipeline

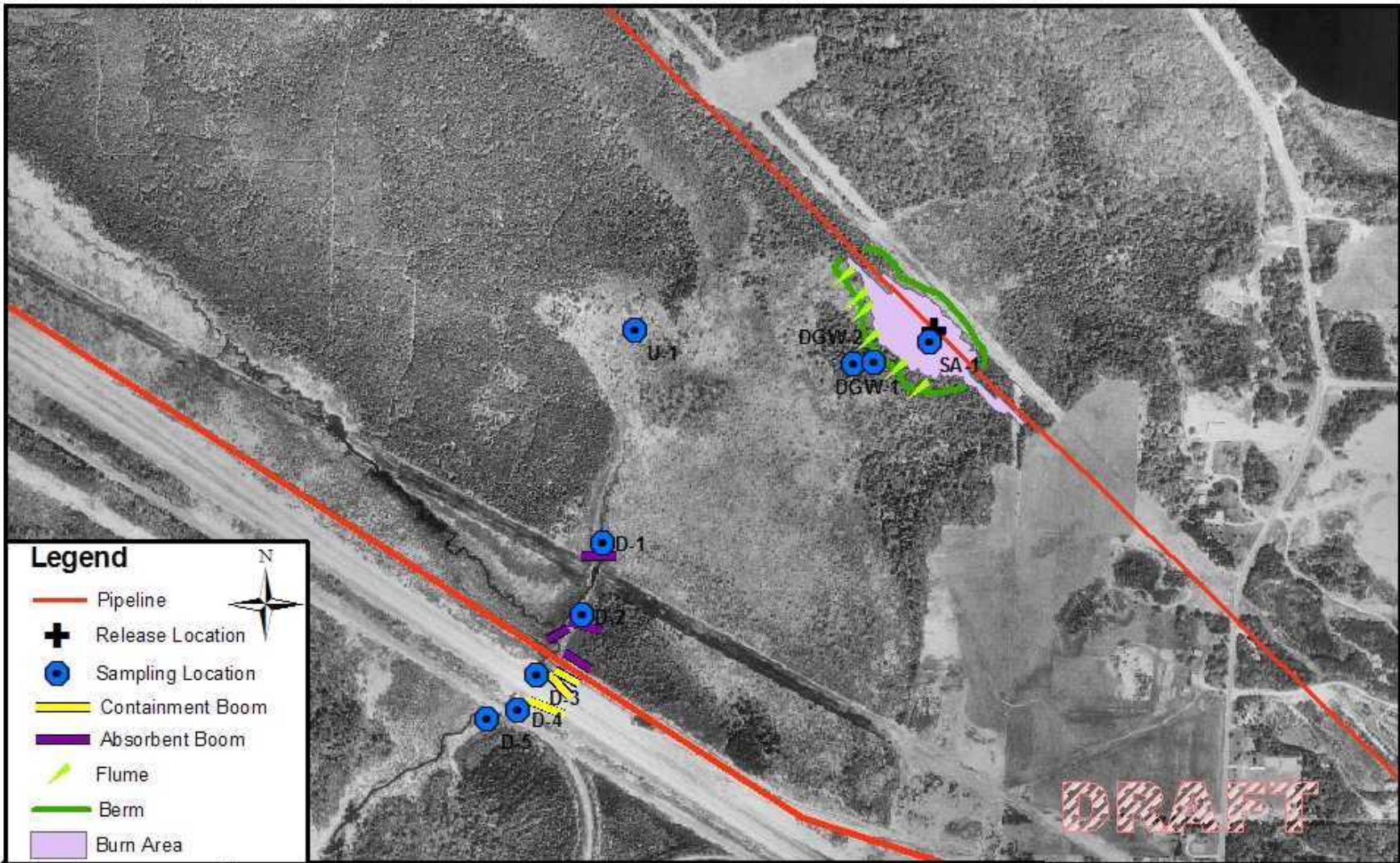


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Figure 1: Site Location MP 1002.7



DATE ISSUED: 7/7/02	
DATE REVISED: 7/16/02	
SCALE: 1:23,311	
DRAWN BY: Jere Mohr, E.I.T. and Alina Mustonen, E.I.T.	
SERIES: MP 1002.7	



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Figure 3: Monitoring Network and Containment Structures MP 1002.7 (Locations Approximate)



DATE ISSUED: 7/7/02	
DATE REVISED: 7/22/02	
SCALE: 1:10,193	
DRAWN BY: Jens Mohr, E.I.T. and Allina Mustonen, E.I.T.	
SERIES: MP 1002.7	























Fire truck standing by























Results of In-situ Burn

- ▶ Most lighter end (*most toxic*) crude oil components believed consumed by fire
- ▶ Remaining product generally much “thicker” consistency
- ▶ Volume of product removed by burn estimated at 50 %

Remaining Clean-up

- ▶ **Site access:** Timber mats used (*some areas required stacking six or seven layers deep*)
- ▶ **Containment:** Trench and dike surround entire site
- ▶ **Clean-up strategy:** Recover product; remove peat
- ▶ **Current efforts:** Continue sampling and definition of any remaining contamination





















Remaining Fire Extinguished

As the majority of the burn had ended, various “pockets” of product would extinguish but then reignite as product came to the surface. Also, by this time, physical recovery was more efficient.













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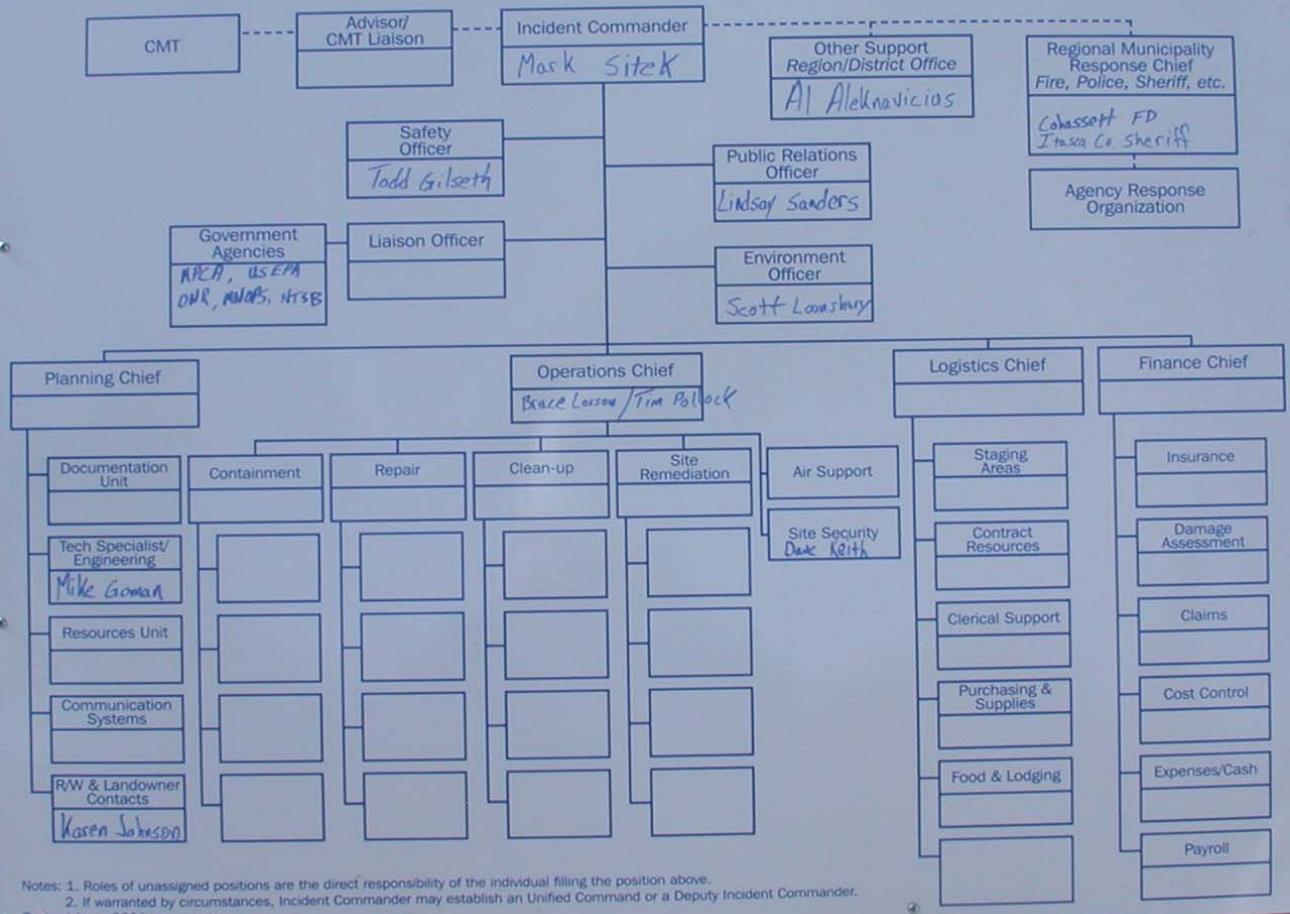
8 11:49





INCIDENT COMMAND ORGANIZATION CHART

(Guideline only - modify to suit prevailing conditions)



Notes: 1. Roles of unassigned positions are the direct responsibility of the individual filling the position above.
 2. If warranted by circumstances, Incident Commander may establish an Unified Command or a Deputy Incident Commander.
 Revised June, 2001

SAFETY PLOT PLAN

DATE # (CMT) DATE













Large reflective eye and decoy wing-flapping birds used to “haze” waterfowl from landing in oil







Placing oiled-peat into windrows and hydrating out oil met with limited success



An aerial photograph taken from a high altitude, showing a large dam structure across a river. The dam is a long, narrow, light-colored structure, possibly made of earth or concrete, with a dark, turbulent flow of water passing through its center. The surrounding landscape is a dense forest of green trees, with some patches of brown and yellow, suggesting autumn. In the upper left, there are some buildings and a road. The sky is clear and blue. The perspective is from above, looking down at the dam and the surrounding area. The text "November 1, 2002: field operations suspended" is overlaid in yellow at the top. A date stamp "9.25.2002" is in the bottom right corner.

November 1, 2002: field operations suspended

9.25.2002

Fall 2003



Vegetation was reestablished (natural and introduced) and water flow through the bog was partially restored.







Prevention

- ▶ Initially, when back in operation, pipeline was operated at a reduced pressure.
- ▶ Company has used additional “smart pig” technology to identify and replace defects.
- ▶ Announced and unannounced drills by the state.
- ▶ Final NTSB Report still pending and decisions by Federal Office of Pipeline Safety.

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