New York State Department of Environmental Conservation

MEMORANDUM

TO: Dave Smith, Director, BCRA
FROM: John Swartwout, Section Chief, BHSC, EIS
SUBJECT: Kingsbury (5-58-008) & Fort Edward (5-58-001) Landfills Off-Site Assessment
DATE: October 5, 2001

In response to your memo of October 1, 2001 regarding the above referenced sites we have reviewed the following information:

- Letter from John Durnin to P. David Smith dated September 27,2001
- NYSDEC, Region 5, Kingsbury & Fort Edward Landfills Off-Site Assessment dated February 2000.

Significant Threat

The summary of results from John Durnin and the Report indicate that concentrations of hazardous substances are well above standards and guidance values for groundwater, surface water and sediment beyond the slurry wall of the landfills. This data plus the fact that the contamination is trending toward higher concentration levels in perimeter wells and contamination is coming from the Kingsbury Landfill is sufficient for determination of significant threat.

Recommendation for Further Investigation

Section 2.1 and 2.2.5.2 of the February 2000 Report have recommended that additional sampling be conducted by the NYSDEC at the Fort Edward Landfill since this sampling was postponed due to ongoing construction activities at the time of that sampling. We agree with this recommendation since the information would tell us more about the off-site area in the immediate vicinity of the landfill.

Justification of Off-Site Investigation

Although a cap and containment remedy was selected for the Kingsbury Landfill, section 2.2.5.2 of the February 2000 Report states that ... "It has been demonstrated previously that this landfill, even though remediated, is discharging contaminants to the groundwater down gradient of its remedy. A determination was made that this did not warrant a corrective action of the landfill's remedy." Section 5.2.2 of the Report again details the reason for the movement of contamination to down gradient of the landfill and potentially affecting the Feeder Tow Canal and the Old Champlain Canal. This being the case, we do not see the utility of further investigation until the source of contamination (landfill) is prevented from further contaminating this area. This issue was raised in Kevin Farrar's August 13, 1997 memo (attached). We believe that this requires a reconsideration of the April 21, 1998 decision not to implement the corrective action which had been recommended by Region 5 (see attached April 24, 1998 memo).

Attachments

bcc: R. Marino
J. Strang
J. Swartwout
K. Farrar
J. White
file

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John P. Cahill
Commissioner

MEMORANDUM

TO: Thomas Quinn, P.E., Assistant Director, Division of Environmental Remediation
FROM: Daniel L. Steenberge, P.E., Regional Remediation Engineer, Region 5
SUBJECT: Kingsbury Landfill #558008 - Water Management/Hydraulic Containment

DATE: April 24, 1998

A meeting was held on April 21, 1998 to discuss the question of the need for hydraulic containment at the Kingsbury Landfill. The outcome of the meeting was a decision. Per my notes, the question, your decision, and an action item, are respectively, as follows:

- The generic question is do design or other requirements, identified during detailed operation and maintenance review, that are in conflict with current policies, practices or procedures require corrective action ?

- The decision is that no corrective action is required if two criterions are satisfied. First is that the remedy has been constructed and is operating as envisioned in the record of decision. Second is that the remedy must also be protective of the public health and environment.

- The action item is that Jerry Rider will incorporate the above into a draft guidance document that he is currently developing on the subject of operation and maintenance reviews.

I sent a copy of this memorandum to everyone that attended the meeting to insure that my interpretation is the same as that of everyone else. Since Jerry will be the ultimate user of this, I suggest that everyone send any comments, corrections, etc. to him rather than directly to you and Jerry will brief you as appropriate.

DLS:bl

cc: Via GroupWise
R. Mulvey
J. Strang
G. Rider
J. Harrington
R. Koelling
L. Dolata
W. Daigle
J. Swartwout
W. Demick

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation
Bureau of Central Remedial Action

MEMORANDUM

TO: Stephen B. Hammond, Director, BCRA
FROM: Kevin L. Farrar, Eng Geologist 2, Remedial Section A, BCRA
SUBJECT: Kingsbury Landfill, Site # 558008
DATE: 8/13/97

I have just read, with great concern, the 8/12/97 memorandum from the Bureau of Construction Services to Thomas Quinn on the subject of the water management at the Kingsbury Landfill (copy attached). It is obvious to me that there is still a great deal of resistance within BCS to any suggestion that the water management program for the Kingsbury Landfill needs to be reviewed by the Department. The reason for this is unknown to me.

However, my position on this matter remains the same; the Department has to face the realities of the Kingsbury situation and take the actions necessary to prevent the site from being an ongoing source of contamination to the surrounding environment.

After reading the 8/12/97 memo form BCS to T. Quinn, I am compelled to point out a few things regarding the reasons given by BCS for their position as stated in their memo:

First bullet: "Leachate level in the landfill remains at a stable elevation below 202 ft during the last 5 years."

Does this elevation of 202 ft signify that there is no leachate leaving the landfill? Certainly not. This much-bandied-about elevation is not a magic number; it is merely an elevation above which the leachate levels are so high above the slurry wall that the landfill is a threat to fall into the Feeder Tow Canal.

The more important point here is the fact that the leachate levels within the encapsulated area **fairly quickly rose** (after the last water management cycle) to elevations approaching 202 ft, **and then stabilized.** Why did they stabilize? **Because the amount of water entering the landfill approached the amount of water leaving the landfill.** Simply because the elevations are approaching an equilibrium does not mean that there is no leachate leaving the landfill. On the contrary, it means that **leachate is leaving the landfill.**

Third bullet: "The permeability of the cut-off wall material was tested to be in the order of 10^{-8} cm/sec. The potential flow through the bentonite cut-off wall is rather insignificant compared with the volume of leachate that had left the landfill during the years prior to encapsulation."

Is the sole criteria for evaluating the effectiveness of remedial actions that the conditions today are better than before remediation? I think not. Rather, we should evaluate remedial actions on their performance in achieving the goals of the remedial program. Encapsulation of a landfill should not be judged solely on a qualitative basis; the Department has an obligation to determine if the remedial action resulted in protection of human health and the environment, and whether the goals set forth for the site have been met. Clearly, **if the Kingsbury Landfill is a continuing source of leachate to the groundwaters of the state, then the goals of the remedial program, and those set for this site, have not been fully met.** Just because things are better now than before does not mean that conditions are acceptable.

Fourth Bullet: "There was a hydrogeologic study performed in the early 90-ties (sic) by E. C. Jordan (ABB) consultants which did not provide convincing evidence that a significant inflow affected the remediated landfill."

"Based upon the model results and interpretations from the hydrogeologic data, the most likely source of the elevated groundwater levels within the landfill is a leaky or poorly-keyed slurry wall, or a sand seam beneath the wall which discharges within the upper slurry wall area." Page 7-2, E. C. Jordan, "Kingsbury Landfill Site, Hydrogeologic Report", December, 1991

Simply put, just because the consultant could not identify which mechanism or mechanisms is/are responsible for the flow of water into the encapsulated area **does not mean** that one could conclude that the data and interpretations presented indicate that the inflow is not responsible for the high leachate levels present within the landfill. Rather, **the data and interpretations presented in the report clearly show that the cause(s) for the high leachate levels is/are entry of water into the landfill through one or multiple mechanisms.**

Fifth bullet: "The cost/benefit ratio of the study followed by the construction of a cut-off trench is not likely to justify the effort."

No basis for this assumption is given. However, it would be remiss for me to not point out a significant basis for the costs associated with continuing to do nothing to address this problem. First, **the costs associated being unsuccessful in our cost recovery efforts against GE for the off-site problems at this site may be significant.** GE may (will?) be able to successfully argue that the State is responsible at least part of the costs of the off-site remediation, since the Department is allowing the site to be a continuing source of leachate to the off-site areas through our failure to properly maintain the site. Second, there is the difficult-to-measure costs of ongoing environmental damage caused by the continued flow of leachate from the site.

I would suggest that the cost of doing nothing at this site could end up being much higher than some think.

Sixth bullet: (long paragraph describing that there has been a significant reduction in the number and amount of surface leachate seepage observed at or near the site)

Is the sole criteria that the Department uses to evaluate the impacts of landfills on the environment, and the effectiveness of landfill remediation, the visual observations of surface leachate seeps? I think not. Again, as stated above, we should evaluate remedial actions on their performance in achieving the goals of the remedial program. Encapsulation of a landfill should not be judged solely on a qualitative basis; the Department has an obligation to determine if the remedial action resulted in protection of human health and the environment, and whether the goals set forth for the site have been met. To state that "...the Kingsbury containment is functioning successfully" based solely on the fact that one can observe a significant reduction in surface leachate seepage is not defensible.

The memo ends with the statement that "...nothing has been done to remediate the environmental damages caused by 30 years of untreated heavily contaminated leachate leaving the site." That may or not be true, but if one writes a memo on this subject next year, the number of years used to close the memo will be 31.

John

I think after this session (if Jim attends) Steve + Dick should get these guys together to debate this issue. Off-site should proceed no matter what the decision is on this aspect of the problem. That study may/can accomplish a lot towards solving this problem.

8/18/97

New York State Department of Environmental Conservation

MEMORANDUM

TO: Michael J. O'Toole, Jr., ,P.E., Director, Division of Environmental Remediation
FROM: Daniel L. Steenberge, P.E., Regional Remediation Engineer, Region 5
SUBJECT: **Kingsbury Landfill #558008 - Water Management/Hydraulic Containment**
DATE: August 29, 1997

The purpose of this memorandum is to request your decision. The issue is containment of the PCBs and solvents in the Kingsbury Landfill. The issue arose from the Region's review of the long term monitoring data for the landfill. The review indicated that both PCB and solvents were being released.

On August 21, 1997 a peer review team gathered to discuss water management at the Kingsbury Landfill. Using a team approach, the discussion points listed below were identified, the key issues identified, and a recommendation was developed.

Summary

Long term monitoring data for the Kingsbury Landfill indicates that both PCBs and solvents are being released through the slurry wall and clay base. The peer review team estimated the rate of release to be 3000 gallons per day of aqueous phase liquid carrying contaminant concentrations of PCB at 1 mg/l and Total Solvents of 1 mg/l.

The peer review team identified and evaluated three feasible courses of action for the Kingsbury Landfill. They are:

- Perform additional study to better define the rate of contaminant release, predict the limits of environmental degradation, and assess environmental and public health risks.
- Allow the contaminant release to continue unabated.
- Mitigate and/or eliminate the leakage by establishing containment.

Recommendations

The team's recommendation for this site plus a side recommendation are:

- To develop design alternatives for improvements to provide hydraulic containment and implement the most cost effective and environmentally sound solution for the Kingsbury Landfill.
- All sites across the State, with a remedy similar to that as implemented at the Kingsbury Landfill, should be critically reviewed to determine if the remedial objectives are being met.

Key Issues

- The remedy was constructed and is operating as per the remedial planning and design. The Bureau of Construction Services has repeatedly stated that its opinion is that the planning/design concept should not be revisited for this reason.

- One of the tenets of the Hazardous Waste Remediation Program has been to achieve source containment wherever practicable and feasible.

- At present the site does not truly contain the source. Rather the existing remedy provides a reduction in the rate of release of contaminants.

- The mass of contaminants being released is relatively small and may not result in measurable environmental degradation other than very close to the landfill (i.e. 50 to 100 feet) due to dilution. Also there may be a significant amount of contamination immediately adjacent to the landfill from releases prior to construction of the slurry wall and cap. [Note: An offsite investigation is currently in progress.]

- The source of 1900 tons of PCB plus an unknown quantity of solvents will act as an infinite source for release of contaminants over time (e.g., 1 ton PCB every 200 years).

- The team believes that hydraulic containment can be achieved and conceptually developed a few alternatives to accomplish this. A very rough cost to accomplish hydraulic containment is $3,000,000. [Approximately 2/3 of this cost is to run the treatment unit to initially lower the internal leachate level. After the leachate level is lowered it is not anticipated that the level will need to be lowered again for 30+ years.]

- The Department is requiring PRPs to provide hydraulic containment in similar scenarios.

- The team believes that allowing the contaminant release is contrary to the mission of the Department and contrary to Division's decisions on numerous other projects across the State.

Key Facts

- Approximately 1900 tons of PCB plus an unknown quantity of industrial solvent was disposed in this landfill.

- The onsite operable unit was remediated in the mid 1980's. The remedy included encircling the 20+/- acre landfill with a slurry wall and the placement of a low permeability cap.

- The planning/design remedial objective was "to abate significant current and future releases or migration of wastes from the site". The team does not believe that this objective is being met, since over time the majority of the "contained" contaminants will be released to the environment, i.e, 1900 +/- tons of PCB.

- The landfill planning/design concept was to maintain approximately 30 feet of head from up gradient to down gradient on the outside to the slurry wall. This meant that there would be approximately 15 feet of head on the outside of the up gradient slurry wall and 15 feet of head on the inside of the down gradient slurry wall.

- The rate of flow through the down gradient slurry wall and clay base was estimated in 1982 to be approximately 1300 gallons per day.

- The contaminants that would move through the down gradient wall and their concentrations were not mentioned in the planning documents other than by inference. The inference being that the concentrations would not be in excess of standards.

- The long term monitoring data for the landfill indicates that both PCB and solvents are being released through the slurry wall. We believe that the quantity of fluid moving through the slurry wall and clay base is approximately 3000 gallons per day and has a concentration of PCB of 1 mg/l and Total Solvents of 1 mg/l.

- The leachate moving through the slurry wall is apparently rapidly diluted by the larger flow around the outside to the wall. This diluted leachate ends up as a subsurface discharge to the Feeder Canal or Cutter Pond which both eventually discharge to the Hudson River.

- The quantity of PCB and Solvents being released is approximately 10 pounds per year of each. [Note: the estimated releases in 1982, via groundwater, prior to constructing the remedy, was Total Solvents 8.02 lbs/year and PCB of zero lbs/year. Apparently, prior to remedial construction, the only releases of concern were via leachate to the surface. Of interest here is that with the slurry wall in place the current rate of release of Solvents estimated by the team is 10 lbs/year or greater than the estimated quantity being released prior to constructing the slurry wall.]

c: Peer Review Team
R. Pergadia
K. Farrar
J. Strang
J. Henkes
D. Foster

c: T. Quinn
S. Hammond
R. Koelling

KINGSBURY LANDFILL

Site Code: 5-58-008

Prepared by: D. Steenberge 4/10/98

Current Issue - Hydraulic Containment

1998 Region 5 included a project for hydraulic containment in the work plan for the upcoming fiscal year. The project was included under the presumption that hydraulic containment is required by the Division as a matter of policy. A meeting is scheduled for April 21, 1998 to discuss whether hydraulic will be required at the Kingsbury Landfill.[1]

Background and History

1995 or 1996

Region 5 included an item in the work plan to design and construct, if feasible, a groundwater bypass system at the landfill to prevent the structure failure of the cap. The rational for this work plan item was the finding of a previously developed engineering report that determined the present worth of groundwater bypass to be substantively less than the periodic operation of the treatment unit to prevent structural failure due to uplift. This item was included in our work plan in response to the contract that had been awarded by the O&M Section to upgrade and operate the treatment plant. The upgrade of the treatment plant was completed in October 1995.

Mid - 1996

When the groundwater bypass project was being scheduled to start, the Bureau of Construction Services questioned the need for the project. This proposed project was brought up in a meeting with Charlie Goddard and the Region was included in the discussions via a conference call. During the meeting it was determined that no analysis had been done to predict if the leachate level in the landfill would actually rise to a point requiring the operation of the treatment unit. The outcomes of the meeting were; 1) the project for a groundwater bypass was dropped and, 2) the Region would do an analysis to predict whether or not the leachate would exceed an elevation requiring operation of the treatment plant.

Late - 1996

Following the meeting discussed above, the Region did an analysis to determine if we could predict if and/or when the leachate elevation would exceed the action level requiring the operation of the treatment unit. The finding of our analysis was that it appeared that the leachate would stabilize below an elevation requiring the operation of the treatment unit. Since this was a prediction based on a regression analysis, leachate elevations have been monitored and compared against our model since that time.

1997

We conducted a separate review of the site as part of our operation and maintenance activities. The outcome of that review was a team report recommending that the landfill leachate be hydraulically contained. The recommendation was based on the Team's interpretation and belief that the policy of the Division was to mitigate the release of contaminants from the site either through capture and treatment or via hydraulic containment. [NOTE: This

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[1] The issue is the Division's policy on hydraulic containment, not cap failure due to uplift nor the question of failure of the original project.

is an entirely different issue from the project calling for groundwater bypass to prevent structural failure of the landfill cap as proposed in the 1995/96 work plan.]

BRIEFING

BRIEFING

BRIEFING

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Erin M. Crotty
Commissioner

MEMORANDUM

TO: P. David Smith, Director, Bureau of Central Remedial Action

FROM: JED John Durnin, Acting Section Chief, Remedial Section C, BCRA

SUBJECT: Kingsbury (5-58-008) & Fort Edward (5-58-001) Landfills Off-Site Assessment

DATE: September 27, 2001

Dave,

I have reviewed the NYSDEC Region #5 report entitled "Kingsbury & Fort Edward Landfills Off-Site Assessment, Final Report" dated February 2000. In addition, I spoke with Russell Huyck, in Region #5 to learn the background to this report which is reflected in his attached 9-17-01 draft memo. The following is a summary of the main elements of the Region #5 investigation and the areas where they did and did not find contamination.

OLD CHAMPLAIN CANAL

GROUNDWATER SAMPLE:

- Collected one sample from one existing well that is at the toe of the Kingsbury landfill. This appears to be an on-site well.
- Sampled for VOCs, SVOCs, PCBs, Pesticides, metals
- Metals in the groundwater are not a problem
- No SVOCs detected
- Found PCBs (aroclor 1242) at 6.3 ppb (.09 ppb is standard)
- Found VOCs: vinyl chloride at 190 ppb (2 ppb standard), 1,2- dichloroethene at 370 ppb (5 ppb is the standard), trichloroethene at 7J ppb (5ppb is the standard)
- Table 14 of the Report indicates a noticeable increase in the concentrations of 1,2-dichloroethene (cis), 1,2-dichloroethene (trans), trichloroethene, vinyl chloride, aroclor 1242, and aroclor 1254 in 1994 and 1995 sampling results of monitoring wells GMW-4 and MW-90-10C. 1991 through 1992 samples for these compound were basically nondetect.
- The Kingsbury Landfill was capped in 1989.

SEDIMENT SAMPLES

- 5 samples collected (CHC1SED - CHC5SED)
- TCE found in sample CHC3SED at 8 ppb (4.9 is the standard)
- PAHs found in all sediment samples except CHC5SED
  CHC1SED - Exceeded 15 times the standard for PAHs

CHC2SED - Exceeded 2 to 5 times the standard for PAHs
CHC3SED - Exceeded 12 to 15 times the standard for PAHs
CHC4SED - Exceeded 16 to 29 times the standard for PAHs

- PCBs were detected in all 5 sediment samples. Concentrations ranged from 34 ppb to 680 ppb.

SURFACE WATER SAMPLES

- Collected 5 surface water samples (CHC1SW - CHC5SW)
- Lead was detected in 4 out of 5 samples at concentrations ranging from 2.8 to 120 ppb (2 ppb is the calculated guidance value).

SURFACE SOIL SAMPLES

- No surface soil samples were collected

SUBSURFACE SOIL SAMPLES

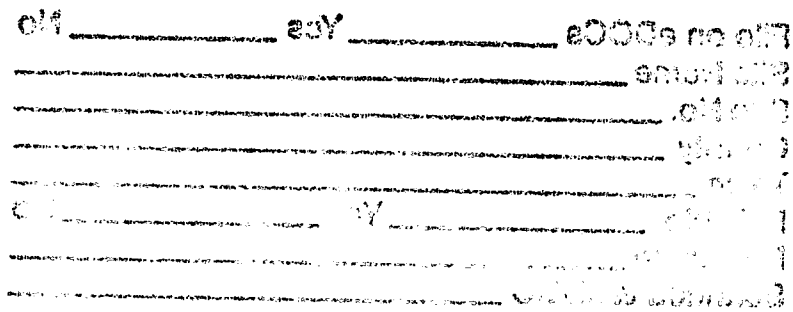
- No subsurface soil samples were collected

FEEDER CANAL

- Collected 4 sediment samples
- No VOCs in sediments nor surface water samples
- No metals in sediments nor surface water samples
- Found PAHs in all 4 sediment samples:
  FC1SED - Exceeded 8 to25 times the standard for 5 PAHs
  FC2SED - Exceeded 12 to 80 times the standard for 5 PAHs
  FC3SED - Exceeded 3 to 5 times the standard for 5 PAHs
  FC4SED - Exceeded 88 to 233 times the standard for 5 PAHs
- Found PCBs in 2 of the 4 sediment samples at concentrations ranging from 210 ppb to 250ppb.

CUTTER POND

- Data from fish samples show PCBs below FDA guidelines.
- Seven sediment and surface water samples collected.
- Some VOCs were detected
- One sediment sample contained PCBs at 1,300 ppb (aroclor 1254).
- Metals were within background for the area.



File on eDOCs X Yes _____ No
Site Name ~~55800~~ Kingsbury / Fort Edward
Site No. 559008 - / 558001
County Washington
Town _____
Foilable X Yes _____ No
File Name 2001-10-09 Off site Assessment
Scanned & eDOC _____