



Department of Toxic Substances Control

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April 26, 2009

Mr. Mohinder Sandhu
Permit Appeals Officer
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RE: DTSC PERMITTING BRIEF REGARDING APPEAL OF A FINAL POST
CLOSURE PERMIT FOR CHEMICAL WASTE MANAGEMENT, INC.,
BAKERSFIELD (EPA ID NO. CAT000624056)

Dear Mr. Sandhu,

Enclosed please find the brief submitted on behalf of DTSC Permitting concerning the
appeal of a final post closure permit for Chemical Waste Management, Inc., Bakersfield,
California 93308.

Thank you for your attention to this matter.

Very truly yours,

//original signed by//

Nancy J. Long
Senior Staff Counsel
Office of Legal Counsel

Enclosure

cc: Scott Ward
8800 Center Drive
Sacramento, California 95826-3200

Peter Bailey
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Mr. Mohinder Sandhu
April 26, 2009
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1 STATE OF CALIFORNIA
2 ENVIRONMENTAL PROTECTION AGENCY
3 DEPARTMENT OF TOXIC SUBSTANCES CONTROL

4 In the Matter of:) Case Number: PAT-FY08/09-03
5)
6 CHEMICAL WASTE MANAGEMENT,) DEPARTMENT OF TOXIC
7 INC. BAKERSFIELD FACILITY) SUBSTANCES CONTROL
8 27001 ROUND MOUNTAIN ROAD) PERMITTING BRIEF ON APPEAL
9 BAKERSFIELD, CA)
10 EPA ID CAT000624056)
11)

12 **1. INTRODUCTION**

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14 This brief is submitted on behalf of the Department of Toxic Substances Control
15 (DTSC) Permitting. On June 19, 2007, DTSC issued a final post closure permit
16 decision for Chemical Waste Management, Inc's Bakersfield facility, located at 27001
17 Round Mountain Road Bakersfield, California 93308. On July 19, 2007, Chemical
18 Waste Management Inc. (CWM) filed an appeal (Petition for Review) regarding the final
19 post closure permit decision (Permit).
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21 In connection with the filing of its Petition for Review, CWM asked DTSC to "hold
22 (the) petition in abeyance" while it sought declassification of its waste pursuant to
23 California Code of Regulations, title 22 section 66260.200 and/or demonstration that the
24 Facility had met the closure by removal and decontamination standards of chapter 14,
25 division 4.5 of the California Code of Regulations, title 22. Following several requests
26 for extensions staying the appeal period, on February 10, 2009, DTSC issued an Order
27 to set Briefing Period for Petition for Review and Denial of Review; the Order granted
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1 review for 13 appeal comments while denying the remainder. DTSC Permitting submits
2 this Brief on Appeal in response to the Order.

3 The 2007 Permit is stayed pending the decision for which review has been
4 granted. The Facility currently conducts post-closure operations and maintenance
5 activities pursuant to the April 30, 1991 DTSC Post-Closure Permit awaiting resolution
6 of this appeal.
7

8 9 **2. BACKGROUND**

10 The Chemical Waste Management Bakersfield facility (Facility) is a closed 150
11 acre site which was used for the disposal of class II-1 designated wastes. It is located
12 approximately 13 miles northeast of the City of Bakersfield. The Facility was operated
13 by M.P. Disposal Company from 1973 until 1981, at which time CWM purchased the
14 Facility. CWM continued hazardous waste operations from 1981 until 1985. At the time
15 of closure, the Facility consisted of two waste management units known as the Eastern
16 and Western Waste Management Units, and within these were nine surface
17 impoundments, two landfills, and a land spreading area. On June 26, 1987, the
18 Department of Health Services (DHS) approved the Facility's Closure Plan, and in 1987,
19 closure construction work was completed. Closure construction included placement of a
20 cap consisting of 18 inches of compacted clay and 15 inches of top soil over the 90
21 acres of the Facility. The Facility did not close in accordance with the closure by
22 removal or decontamination standards set forth in the regulations; therefore, the Facility
23 became subject to post closure permit requirements.
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3. APPEAL ARGUMENTS

3.1 Appeal Order Comment 1(a): DTSC's rolling renewal of the 30-year [post-closure] period is contrary to law

DTSC issues post-closure permits for a maximum of 10 years and upon renewal must review if the 30-year post-closure period is adequate, or if an alternative post-closure period must be implemented. (Health & Saf. Code, §25200(c)(1)(A); 42 U.S.C. §6925 subd. (c)(3).) Pursuant to California Code Regulations, title 22, section 66270.41, when a permit is reissued, "the entire permit is reopened and subject to revision and the permit is reissued for a new term." For permitted hazardous waste disposal facilities, DTSC will typically issue a renewed 30 year post-closure period, unless a shorter period is sufficiently protective of human health and the environment. Alternatively, if a hazardous waste facility owner or operator demonstrates to the satisfaction of DTSC that a reduced post-closure period is sufficient to protect human health and the environment, the period may be reduced through the permit modification procedures. (Cal. Code Regs., tit. 22, §66264.117(b).) To terminate post-closure requirements, a hazardous waste facility owner or operator must demonstrate that the closure by removal or decontamination standards of chapter 14 of California Code of Regulations, title, 22, division 4.5 were met. (Cal. Code Regs., tit. 22, §§66264.118(a) & 66270.1((c)(5).)

CWM argues that DTSC is required to make findings based on evidence that indicates that an extension of the 30-year post-closure period is necessary to protect human health and the environment. However, CWM is relying on the permit modification regulations which require such a finding during the term of the permit, not upon renewal when DTSC establishes permit conditions necessary to protect public

1 health and the environment, including the term for financial assurance. (Health & Saf.
2 Code, §§25200 & 25245; Cal. Code Regs., tit. 22, §66264.117(b).)

3
4 When DTSC established the permit conditions for this Facility, it determined that
5 the 30-year post-closure period was appropriate. DTSC further provided its basis for
6 the 30-year period in The Response to Comments for the proposed Permit Decision.

7 DTSC recently issued proposed regulations to clarify that the period of post-
8 closure care is a future date upon which DTSC may find that post-closure care, and its
9 associated monitoring and reporting requirements, is no longer necessary to protect
10 human health and the environment. (See, DTSC Proposed Financial Assurance
11 Regulations, DTSC Ref. No. R-2007-06; OAL Ref. No. Z-2009-0326-01; See proposed
12 amendments Cal. Code Regs., tit. 22, §§66264.117 & 66265.117.)¹

14 In this case, because CWM has not demonstrated to DTSC that it has achieved
15 “clean closure” or that a shorter post-closure care period is appropriate, DTSC acted
16 within its authority to establish a 30-year post-closure period which requires financial
17 assurance for that term as well.

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20 **3.2 Appeal Order Comment 1(d): The cost estimate based on project manager**
21 **time at 50 percent for 30 years is excessive**

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23 Without citing to any authority, CWM argues project management costs should
24 not exceed 15% of a full time position. Although this seems reasonable, hourly rate

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27 ¹ The proposed regulations provide a well defined procedure for ensuring post-closure care continues as long as
28 necessary rather than an arbitrary length of time, with input from the public. The approach is consistent with the
findings of the Legislative Analyst Office (LAO), who in 2006, recommended that the regulations be revised, in this
case clarified, to address the need for financial assurances to account for all costs associated with ensuring that sites,
particularly land disposal facilities, do not pose a threat to the public or the environment. (See, The LAO Report,
Financial Assurances: Strengthening Public Safety of Waste Facilities and Surface Mines, (4/06).)

1 calculation should be based on DTSC project management costs. The cost estimate is
2 intended to ensure that if the State were left to cover the costs of work done at the
3 Facility, in this case project management, there would be sufficient funds to do so.

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5 Based on DTSC current contract estimation rates of \$161 for a hazardous
6 substances engineer and 46 work weeks per year (to account for time missed because
7 of holiday, vacation, sick leave and personal leave), 15 % of a full time position equals
8 annual project management cost of \$44,436. This value is considerably more than the
9 annual \$25,000 project management cost included in the Permit. As the project
10 management costs written in the Permit are considerably less than the State's actual
11 costs to perform this work, DTSC Permitting believes project management costs
12 included in the existing cost estimate are justifiable and not excessive.
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15 **3.3 Appeal Order Comment 1(f): Financial assurance for cover reconstruction**
16 **is not appropriate until DTSC approves the reconstruction cost estimate**
17 **and/or reconstruction plan; financial assurance should not be required**
18 **contemporaneously with the cost estimate**

19 Refer to section 3.4.

20 **3.4 Appeal Order Comment 2(a) through 2(e): (a). The existing cover does**
21 **restrict infiltration to acceptable de minimis volumes. (b). The existing**
22 **cover meets "original design specifications that meet regulatory**
23 **requirements." The cover meets the regulatory requirements at the time**
24 **of construction and meets the requirements today. There is no need to**
25 **reconstruct the cover. (c). The standard of "no" infiltration is technically**
26 **impossible and cannot be achieved. (d). DTSC's assumption that the**
27 **cover will completely fail at some point in time is improper. DTSC's**
28 **statement "it is a matter of when, not if" is a supposition not supported**
by sound engineering. (e). The design standard for the closure cover is
100 years. This is not the financial assurance standard

In late 1997 and early 1998, the Bakersfield area, where the Facility is located,
experienced the largest historical precipitation amounts. The rainfall occurring during

1 the period of November 1997 to May 1998 totaled 14 inches, while an average water
2 year rainfall total is approximately 6.5 inches. At various times through 1998, the
3 Facility removed quantities of leachate which were significantly larger than usual for the
4 Facility. DTSC Permitting determined that the unusually large amounts of leachate
5 removed during this period suggested the Facility's closure cover was allowing rainfall
6 infiltration through the cover, and thus not meeting the requirements of California Code
7 of Regulations, title 22, section 66264.310; specifically that the closure cover should be
8 designed to prevent water infiltration through it for a period of at least 100 years. Upon
9 renewal of the Facility's Permit, DTSC Permitting required the Facility to replace or
10 repair the Facility's closure cover to meet applicable regulatory requirements. Through
11 a special permit condition, the Facility was required to submit engineering plans to
12 reconstruct the closure cover to meet regulatory requirements and specify a cover that
13 included the following components or their hydraulic equivalent: a low hydraulic
14 conductivity layer consisting of 24 inches of compacted clay and a geomembrane of a
15 minimum thickness of 60 mil, a drainage layer, a biotic barrier layer, and a top soil layer
16 of at least 24 inches.
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20 DTSC Permitting was additionally mindful however, that many factors are
21 involved with cover performance, and consequently, it was DTSC Permitting's opinion
22 that the Facility would have the option to provide information to attempt to demonstrate
23 that the existing closure cover meets applicable regulatory requirements. Since
24 issuance of the Permit, nearly two years ago, considerable efforts have been completed
25 to investigate the existing cover. Additional information now available to DTSC
26 Permitting, includes: subsurface inspection of the cover's clay layer, the completion of
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1 increased cover maintenance and repair activities, the placement of moisture monitoring
2 probes in the cover, laboratory analysis of the cover's hydraulic conductivity,
3 quantification of potential evapotranspiration water demand, water balance modeling
4 analysis of the cover profile, and a more complete understanding of the leachate
5 collection and removal system (LCRS) and of the locations that generated leachate in
6 1998. Based upon this information, it is DTSC Permitting's opinion that it has been
7 adequately demonstrated that the Facility's existing closure cover meets applicable
8 regulatory requirements. An April 21, 2009 memorandum provides the basis and
9 supporting information for this decision. (See, attached Exhibit 1.) DTSC Permitting
10 agrees to withdraw special permit conditions V.3.b and V.3.c.

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14 **3.5 Appeal Order Comment 3(a) through 3(c): (a) DTSC disregarded important**
15 **groundwater data. (b) DTSC's assumption that the liner will fail and that**
16 **"hazardous waste" liquid as volatile organic compounds will enter into**
17 **the groundwater is improper. Documents cited indicate that all waste in**
18 **was non-hazardous. No volatile organics have been or likely will be**
19 **detected in groundwater. (c) Permit ignores DTSC's own interpretation of**
20 **"no threat."**

21 In response to Appeal Comment 3.5, CWM confuses issues in the Permit by
22 suggesting that DTSC Permitting's decision for a renewed 30 year post-closure period
23 was based on increased leachate removed during 1998. This is simply not the case.
24 For permitted hazardous waste disposal facilities, DTSC typically sets the post-closure
25 period for 30 years. If a hazardous waste facility owner wants DTSC to consider a
26 shorter post-closure period, they should follow permit modification procedures as
27 discussed above in Comment 3.1.
28

1 CWM attempts to place the burden upon DTSC of proving waste at the
2 Bakersfield Facility is hazardous during this permit renewal process. The CWM
3 Bakersfield Facility is a permitted hazardous waste disposal site. It was, and still is,
4 subject to the post-closure permit requirements. Material buried at the Facility are
5 legally classified as hazardous waste regardless of groundwater monitoring data results.
6 By continuing this line of argument, CWM appears to want to simply argue there is no
7 risk rather than demonstrating there is no risk through completion of the clean closure
8 process. Although data suggests the Facility may be able to achieve clean closure by
9 decontamination and removal, at this time, neither groundwater monitoring data or the
10 preliminary site characterization data can substantiate a decision other than the
11 continuation of post-closure care. Until the Facility has achieved clean closure by
12 decontamination and removal, based on full site characterization and risk assessment,
13 DTSC Permitting will require, under these circumstances, a renewed 30-year post
14 closure period.
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19 **3.6 Appeal Order Comment 4: 60 day deadline for special permit condition**
20 **V.1 and V.2**

21 CWM argues that DTSC arbitrarily imposed a 60-day deadline for submittal of
22 declassification notices and workplans associated with demonstrating "clean closure" of
23 the Facility. Since issuance of the draft permit decision, DTSC has been working with
24 CWM for almost two years to support CWM's efforts to declassify wastes and/or
25 demonstrate closure by removal. Conspicuously absent from CWM's argument is the
26 fact DTSC gave CWM several extensions and additional time for submittal of the items
27 associated with these permit conditions.
28

1 Without conceding the appropriateness of the conditions, DTSC is willing to
2 withdraw both permit condition V.1 and V.2.

3 Furthermore, based on its experience in working with the Facility for almost two
4 years on the declassification and clean closure issues, DTSC believes that if CWM
5 wishes to continue with declassification and/or demonstration of clean closure, it must
6 do so through the permit modification process. Any analysis already provided to DTSC
7 can be used in evaluating the permit modification request.
8

9 It is well settled that if DTSC determines that a Facility did not close in
10 accordance with the closure by removal or decontamination standards set forth in the
11 regulations, the Facility is subject to post-closure permitting requirements. (Cal. Code
12 Regs., tit. 22, §§66270.1(c)(5)(C) & §66264.228; see also In the Matter Of: Southern
13 Timber Products, Inc. D/B/A Southern Pine Wood Preserving Company and Brax
14 Batson (1990) 3 E.A.D. 371, 376 [Closure performance standard for surface
15 impoundments required the removal of leachate and materials contaminated with waste
16 or leachate (including ground water) that pose a substantial present or potential threat
17 to human health or the environment, citing 52 Fed. Reg., 8704, 8706 (3/19/87).].)
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19 Since 1991, CWM has been subject to a post-closure permit as wastes contained
20 at the Facility are conclusively categorized as hazardous waste. The proper
21 mechanism for determining whether the Facility has achieved clean closure is by
22 demonstrating to DTSC that CWM has met the closure performance standards and/or
23 by seeking a shorter post-closure period pursuant to the permit modification procedures
24 as suggested by CWM in its response to Appeal Comment 3.1. The Permitting appeal
25 process is simply not the proper forum for either demonstrating clean closure and, in
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1 this case, CWM has failed to demonstrate that a shorter post-closure period is sufficient
2 to protect public health and the environment.

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4 **3.7 Appeal Comment 5: Incorrect Owner/Operator name on the Final Permit**
5 **Cover Page**

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7 The Owner/Operator name will be changed Chemical Waste Management, Inc.
8 on the Final Permit cover page.

9
10 **4. CONCLUSION**

11 For the reasons set forth above, the Permitting Program recommends that the
12 Final Decision in this matter conclude as follows:

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14 CWM Comments 3.4 & 3.7 be granted and that all other Comments be Denied.

15 DTSC agrees to withdraw permit conditions V.1, V.2, V.3.b & V.3.c.
16
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18 DATED: April 26, 2009

19 //original signed by//

20
21 _____
Nancy J. Long

22 Senior Staff Counsel

23 Department of Toxic Substances Control
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25
26
27
28



Department of Toxic Substances Control

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Environmental Protection

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TO: File

FROM: Scott Ward *S.W. 4/21/09*
Hazardous Substances Engineer
Permit Renewal Team

DATE: April 21, 2009

SUBJECT: CLOSURE COVER APPEAL DECISION, CHEMICAL WASTE
MANAGEMENT BAKERSFIELD FACILITY, KERN COUNTY, CA,
EPA ID CAT000624056

On April 27, 2009, the Department of Toxic Substances Control (DTSC) Permitting Program submitted their appeal briefing to the DTSC permitting appeal officer in the matter of the June 19, 2007 permit decision for Chemical Waste Management, Inc's Bakersfield facility (Facility) located at 27001 Round Mountain Road, Bakersfield, California. On July 19, 2007, Chemical Waste Management Inc. (CWM) filed an appeal (Petition for Review) regarding the final post closure permit decision (Permit). This memorandum provides the technical basis regarding DTSC Permitting's decision to withdraw special conditions V.3.b and V.3.c requiring replacement of the facility's existing closure cover.

In late 1997 and early 1998 the Bakersfield area where the Facility is located experienced the largest precipitation amounts of its historical record. The rainfall occurring during the period of November 1997 to May 1998 totaled 14 inches, while an average water year rainfall total is about 6.5 inches. At various times though 1998 the Facility removed quantities of leachate which were significantly larger than usual for the site. To DTSC Permitting, the unusually large amounts of leachate removed during this period suggested the site's closure cover was allowing rainfall infiltration though the cover, and thus not meeting the requirements of the California Code of Regulations, title 22, section 66264.310; specifically that the closure cover should be designed to prevent water infiltration through it for a period of at least 100 years. Upon renewal of the Facility's Permit,

File
April 21, 2009

DTSC Permitting required the Facility to replace or repair the site's closure cover to meet applicable regulatory requirements. Through a special permit condition, the Facility was required to submit engineering plans to reconstruct the closure cover to meet regulatory requirements and specify a cover that included the following components or their hydraulic equivalent: a low hydraulic conductivity layer consisting of 24 inches of compacted clay and a geomembrane of a minimum thickness of 60 mil, a drainage layer, a biotic barrier layer, and a top soil layer of at least 24 inches.

DTSC Permitting was additionally mindful however, that many factors are involved with cover performance, and consequently, it was DTSC Permitting's opinion that the Facility would have the option to provide information to attempt to demonstrate that the existing closure cover meets applicable regulatory requirements. Since issuance of the Permit, considerable efforts have been completed to investigate the existing cover. Additional information now available to DTSC Permitting, includes: subsurface inspection of the cover's clay layer, the completion of increased cover maintenance and repair activities, the placement of moisture monitoring probes in the cover, laboratory analysis of the cover's hydraulic conductivity, quantification of potential evapotranspiration water demand, water balance modeling analysis of the cover profile, and a more complete understanding of the leachate collection and removal system (LCRS) and of the locations that generated leachate in 1998. It is DTSC Permitting's opinion that the Facility's existing closure cover meets applicable regulatory requirements, based on the following:

1. The North West Canyon Sump (NWCS) is not hydraulically linked to waste management units. DTSC Permitting now understands that a clear hydraulic link between the NWCS and adjacent Western Waste Management Units (WWMU) does not exist. At the time of issuance of the Permit, DTSC Permitting believed the NWCS served as a leachate collection sump for the WWMUs. DTSC now understands that the NWCS was originally built to collect groundwater impacted by a spill that had occurred in North West Canyon. As the overwhelming majority of the total leachate removed during 1998 came from NWCS, the lack of a hydraulic link to waste management units does not support the assertion that the cover allowed water to infiltrate through to the leachate collection sump.
2. A reevaluation of leachate removal data along with recent data collection and analysis submitted to DTSC Permitting does not support the requirement for replacement of the existing closure cover. Leachate removal systems are present in the North West Canyon, and at evaporation ponds P1, P2, P3, P5, and P6. It is now understood that the NWCS is not hydraulically connected to waste management units. Pond P3 showed no increase in leachate during 1998. The largest amounts of leachate removal from ponds P1 and P6 occurred in March and April 1998. The timing of the leachate removal from P1 and P6 occurring so close to the heaviest rainfall, which occurred in February, suggests that leachate had not been removed

in the previous months rather than that rainfall infiltrated through the existing closure cover. Data from the remaining two ponds, P2 and P5, showed leachate removal in the months immediately following the heaviest rain of 1998, again suggesting leachate may not have been removed in previous months. These data also showed higher than normal amounts of leachate were removed in the final months of 1998, which could suggest the cover allowed rainfall infiltration into the LCRS. However, it is DTSC Permitting's opinion that increased leachate removal from ponds P2 and P5 do not support the requirement of a new closure cover in consideration of the following:

- a. Maintenance and repair activities completed on ponds P2 and P5. During the fall of 2007, CWM initiated maintenance and repair activities on the upper layer of the closure cover on ponds P2 and P5. These activities included top-soil scarification, moisture conditioning, re-compacting, and hydro-seeding per specifications of the Facility's previously approved closure plan.
- b. Placement of moisture monitoring probes in the cover profile of ponds P2 and P5. Moisture monitoring probes have been installed at seven locations, three in P2, three in P5, and one in P1. Each location consists of clusters of moisture monitoring probes which vary in depth from 6 inches to 38 inches below ground surface. Since December of 2007, moisture in the cover profile has been monitored. Despite the short period of time the system has been operating, increases in soil moisture have been detected only to a depth of 12 inches in the vegetative layer. Probes at a depth of 6 inches have recorded an immediate increase in soil moisture with precipitation events, which suggests preferential flow due to desiccation cracking. Although probes at a depth of 12 inches have also recorded increased moisture with rainfall, the moisture response of these probes was not immediate, which suggest that desiccation cracking may be confined to the upper six inches of the vegetative layer. Deeper probes located in the clay layer of the cover show seasonal moisture changes which are attributed to temperature change, and when compared year to year (i.e. from January 2008 to January 2009), these results show relatively constant soil moisture content.

Moisture monitoring probes will remain in the cover system and provide active monitoring which can be used to evaluate performance of the cover system and identify potential future problems at P2 and P5 should they arise.

It should also be noted that a high sensitivity pressure transducer has been placed in the leachate collection sump of pond P2. This pressure transducer will, on an hourly basis, provide water level data in the P2 sump.

- c. Inspection of subsurface clay layer of P2 and P5 did not reveal desiccation cracking. During installation of moisture monitoring probes discussed in paragraph b., a visual inspection of the clay layer in the cover on ponds P2 and P5 was completed. In a letter dated April 21, 2008, from Applied Soil Water Soil Technologies to CWM, it is reported that observations revealed that the lower compacted clay layer did not exhibit signs of desiccation. Additionally, as mentioned above, moisture monitoring data collected to date indicate that probes located in the cover's clay layer show only seasonal moisture variations which are attributed to temperature changes.
- d. Quantification of potential evapotranspiration (PET) shows water demand significantly exceeds water availability. PET represents the combination of how much water can be removed from soil through evaporation and from plant uptake. PET is computed using plant specific root water uptake data and site specific atmospheric data including humidity, daily wind speed, and minimum/maximum temperatures. Calculations show PET water demand of approximately 80 inches per year while the average annual precipitation is approximately 6.5 inches. The ratio of PET to precipitation indicates that on an annual basis, plant and atmospheric demand for water is over 12 times greater than the available water. The PET to precipitation ratio is much larger during the summer months, making the possibility of water infiltration from previous wet periods continuing though the summer months less likely.
- e. Leachate removal does not necessarily correspond to leachate collection in sumps. If leachate removal were completed by automated mechanical systems, the timing of leachate collection in the sumps would be correlated with the time of removal. Leachate removal at the Facility is however completed manually. Laps in leachate removal could allow leachate build up, resulting in larger than normal volumes to be extracted upon removal activity. It is plausible or even likely that this may have occurred during 1998.
- f. Recent field activities have provided additional hydraulic conductivity data at ponds P2 and P5. The hydraulic conductivity for the clay layer at pond P2 was measured at $2.77E-6$ cm/s and pond P5 was measured at $3.48E-6$ cm/s; both values consistent with original design specifications. Hydraulic conductivity of waste material was also measured during these field activities. At the time of closure, waste stabilization included blending of waste with dry material and mixing with cement. Drilling conducted during field activities has shown that waste in place was dense to very dense, as indicated by high blow counts encountered during drilling. DTSC Permitting staff has also observed these field conditions during site characterization activities conducted in June 2008. Waste material hydraulic conductivity

measured at P2 ranged from $4.2E-4$ cm/s to $6.60E-9$ cm/s, while waste material hydraulic conductivity measured at P5 ranged from $1.40E-6$ cm/s to $2.20E-7$ cm/s.

- g. Unsaturated flow modeling of the cover profile indicates the existing closure cover works effectively as an evapotranspirative cover. Unsaturated flow modeling of the existing closure cover was completed using UNSAT H. Using site specific soil, climate, and vegetative data, modeling was constructed to identify the depth in the cover profile at which flux is minimized to insignificant values; that is, the depth at which an additional inch of soil would no longer reduce flux though the cover profile, known as the point of diminishing returns (PODR). Modeling results indicate that during average precipitation years, a PODR of 18 inches is expected – 15 inches above the minimum 33 inch cover profile. Modeling based on 1998 rainfall show a PODR of 19 inches. Additional modeling based on both multiple years of 1998 rainfall and future soil conditions provided results that showed the PODR less than or equal to the minimum depth of the existing closure cover.
- h. Leachate removal from P2 and P5 during 1998 is not sufficient justification for replacement of the existing closure cover. If above points a. though g. are ignored, and it is assumed that in 1998 rainfall did infiltrate though the existing closure cover into the leachate sumps in ponds P2 and P5, the question, then, becomes whether or not such a scenario technically supports replacement of the existing closure cover. According to the Facility's post-closure permit application, the aerial extent of P2 is 2.0 acres while P5 is 1.5 acres. It is DTSC Permitting's opinion that infiltration though a 3.5 acre area of the cover would not technically justify replacement of a 90 acre closure cover.