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October 4, 2011

VIA US MAIL AND EMAIL

Margaret Clark
Vice Chair
Los Angeles County Solid Waste Management Committee/
Integrated Waste Management Task Force
900 S. Fremont Ave., 3rd Floor Annex
Alhambra, CA 91803-1331

RE: Sunshine Canyon Landfill

Dear Ms. Clark,

I am writing in response to your letter of September 19, 2011.

In doing so, we wish to go on record as registering our objection to the Task Force engaging in regulatory matters over which the Task Force does not authority. Under California Law, the role of a County Integrated Waste Management Taskforce is to assist in the development of a County Integrated Waste Management Plan, and in particular making recommendations regarding the Plan's "Siting Element" -- which only very generally identifies solid waste disposal facilities in a county. (Public Resources Code section 40950). Therefore, the Task Force is a recommending body for general solid waste countywide planning and is not a regulatory agency with authority or jurisdiction over individual solid waste facilities, such as the Sunshine Canyon Landfill. We therefore believe the Task Force is going well beyond the bounds of its legislative authority when commenting on specific issues such as the types of daily cover that may be used at the landfill. These are matters exclusively for determination by the Local Enforcement Agency, the Water Board, and the City and County relative to any specific provisions in our land use entitlements as they in turn relate to the City and County's respective portions of the landfill.

As a courtesy we will respond to your letter, but in doing so we do not in any way concede that the Task Force has jurisdiction or authority over operations at the Sunshine Canyon Landfill.

With respect to your question regarding the practice of applying and removing soil cover at the working face of a landfill, your letter include an incomplete quotation of the Waste Board

regulation found at Title 27 California Code of Regulations, section 20680. Your quotation of the regulation omits the parenthetical phrase found in 27 CCR 20680(a) which reads: "Except as provided in paragraph(b), paragraph(f) and section 20690," (emphasis added) "the owners or operators of all municipal solid waste landfill units shall cover disposed solid waste with a minimum of six inches of compacted earth and material at the end of each operating day..."

Section 20690 sets forth the Waste Board's (now Cal Recycle's) regulations allowing for the use of alternative daily cover instead of soil at municipal solid waste landfills. It is a common practice at landfills in California to use alternative daily cover in lieu of soil as daily cover. Furthermore, where soil is used, standard industry practice is to use only six inches of soil (as stated in the above regulation) and, further, to remove the soil that has been used as daily cover before beginning disposal operations in the same area on the following day.

The widespread use of alternative daily cover materials such as ground greenwaste, tarps and other geosynthetic fabrics, foam, sludge and sludge derived from materials, treated auto shredder waste, contaminated soils, processed construction and demolition debris waste, and other alternative cover materials is well documented. The practice is described in some detail in the Alternative Daily Cover (ADC) White Paper published by the California Integrated Waste Management Board in October of 2009 – see attached Ex. A.

With respect to your statement that the Task Force is not aware of any landfills within the Los Angeles region that "remove daily soil cover at the working face," we respond that soil is not commonly used at Los Angeles regional landfills as daily cover. As the Integrated Waste Management Board's ADC White Paper notes, on a statewide basis, the majority of alternative daily cover is in use in Southern California and in the San Francisco Bay Area. Table six on page eight of the White Paper indicates the highest uses of ADC are in Los Angeles County. Moreover, of the ADC in use in Los Angeles County, by far the predominant type of ADC used is ground greenwaste. For example, the Puente Hills landfill owned by the Los Angeles County Sanitation District typically uses ground greenwaste as alternative daily cover in lieu of soil. According to Cal Recycle records, Puente Hills typically uses over a quarter of a million tons of greenwaste as alternative daily cover each year. In a letter commenting on the Waste Board's ADC White Paper, the LA Sanitation District wrote to the Chief of Permitting for the Waste Board on August 19, 2009, explaining the need for the majority of jurisdictions in Los Angeles County to have their processed greenwaste used as alternative daily cover to meet state mandated diversion requirements. (See attached Exhibit B).

In an EPA publication entitled, "The Use of Alternative Materials for Daily Cover at Municipal Solid Waste Landfills" (Exhibit C) EPA indicates that as a result of its investigation, "alternative daily cover materials can augment management practices at municipal solid waste landfills while enhancing environment control." The report concludes the "use of alternative materials for daily cover in lieu of soil can result in operational, performance, environmental,

and economic benefits at municipal solid waste landfills. These benefits include ease of application, improved effectiveness in meeting site operational and regulatory requirements, savings and landfill capacity, decrease requirements for soil, and more effective management of leachates and gases."

On this latter point, the Sunshine Canyon Landfill has noted in correspondence with the LA County Department of Public Works and other regulatory agencies that the use of nine inches of daily cover soil which cannot be removed at the beginning of the next operating day will cause long term problems for the landfill-- both in terms of landfill gas management and leachate collection. This is because leaving soil layers in place within the landfill waste mass will interfere with the collection of landfill gas and leachate by the control systems embedded in the landfill. Soil used as daily cover will create impermeable lenses which can trap gasses and leachate and cause them to be emitted from the cover of the landfill through fugitive emissions of landfill gas and leachate seeps. This point is recognized in the EPA article quoted above, in which it is noted that "the use of [alternative daily cover materials] can enhance controlled leachate and gas management by limiting the development of intervening cover layers. Eliminating such layers facilitates unimpeded movement and collection of leachates and gasses within and between the landfill cells and when leachate recycle for accelerated stabilization is practiced." The EPA article goes on to say that "[m]ost alternative daily cover materials are able to meet established criteria for daily cover under various operational and climactic conditions. Certain materials are more effective than soil as a daily cover, especially with respect to control of vector access, blowing litter, and odor generation and to the minimization of moisture infiltration."

In fact, Sunshine Canyon's use permit from the County of Los Angeles requires that Sunshine Canyon use its best efforts to maximize landfill capacity and to use alternative daily cover materials other than soil. Condition 23 states that "BFI shall operate the Facility in a manner that maximizes the amount of Solid Waste that can be disposed of in the Landfill, by, at a minimum: (D) utilizing waste materials received and processed at the Facility, such as shredded green waste, as an alternative to daily, intermediate, and final cover, to the extent such usage is deemed technically feasible and proper by the appropriate regulatory agencies." The landfill is also admonished to "investigate methods to reduce the volume of daily cover required at the landfill as allowed by the appropriate regulatory agencies." (CUP Cond. 23 C.)

The landfill's Joint Technical Document, approved by the LEA, at section b.5.2.1 entitled "Alternative Daily Covers" states as follows. "Alternative daily covers (ADC) will be used to conserve air space and native soils. In addition, the use of ADC will provide the operator an alternative method of covering the working face during inclement weather. SCL will utilize geosynthetic panels, processed green material, and/or soil in any combination on any particular day as permitted by the current SWFP's for the City and County SCL (see Appendix D). Other ADC material specifically approved in 27 CCR may also be utilized as authorized by the

appropriate regulatory agencies." The JTD goes on to describe the specific procedures for using tarps and processed green material as ADC.

We trust the foregoing information will correct any misinformation that certain Task Force members may have regarding common industry practices concerning the use of alternative daily cover materials other than soil at landfills in California and Los Angeles County, and the regulations and permit conditions applicable to Sunshine Canyon.

We appreciate our past working relationship with the Task Force on issuance of the conformance finding for the joint City County Landfill and other regional solid waste planning issues within the Task Force's authority. However, in the future, we do not believe it appropriate to engage in communications with the Task Force about the interpretation or enforcement of specific permit conditions at Sunshine Canyon.

Respectfully,

Thomas M. Bruen

cc. David Cieply
Larry Hafetz, Esq.

TMB:jlm

Alternative Daily Cover White Paper
California Integrated Waste Management Board
October 2009

California Integrated Waste Management Board staff was directed by Board Members to review Board regulations to ensure they are grounded in the best available science, address changing market conditions, and take advantage of developing technologies. Board staff developed priority regulatory areas for review as part of the Strategic Directives adopted by Board Members in February 2007 and to support the Organics Roadmap. One of the priority regulation areas Board Members directed staff to review is alternative daily cover regulations.

Landfill operators must cover all disposed solid waste at the end of each day to control odors, vectors, fires, litter, and scavenging. Federal regulations require landfill operators to use six inches of earthen materials as daily cover; operators are also allowed to use alternative materials in lieu of earthen materials to cover waste at landfills. These materials are referred to as alternative daily cover. California regulations[1] also require all landfill operators to cover disposed solid waste with a minimum of six inches of compacted earthen material or alternative cover materials of alternative thickness at the end of each operating day. In addition, the use of waste-derived ADC at landfills in California is considered diversion through recycling and not disposal.[2]

Some stakeholders have indicated that ADC materials are used in excess of the limits contained in regulation. Overuse results in jurisdictions having less waste allocated to disposal when calculating diversion rates. Stakeholders have also indicated that material performance and environmental impacts of ADC have not been fully researched. In addition, some stakeholders in the compost and biomass industry indicate that the use of green material ADC negatively impacts the availability of compost/mulch feedstock. Other stakeholders indicate that the positive aspects of ADC must also be considered, such as conserving landfill capacity, providing an environmentally beneficial alternative to impacts associated with traditional soil cover, and establishing a collection infrastructure and backup market for waste-derived materials with limited uses. Below are several issues identified by stakeholders based on recent informal interviews:

1. The optimum amount, depth, and quality of Board-approved ADC may need to be more fully researched.
2. It may be difficult to evaluate ADC compliance, and misuse of ADC can go undetected.
3. ADC often contains materials that are not allowed in regulation.
4. The CIWMB's site-demonstration project requirements for new ADC materials lack guidance which makes it difficult to test new ADC types, such Material Recovery Facility and C&D fines.
5. The definition of Green Material in the compostable materials handling regulations is different than the ADC definition of Processed Green Material.
6. The CIWMB's Strategic Directive 6.1 aims to reduce the amount of organics in the waste stream by 50 percent by 2020. Organic waste-derived ADC is considered beneficial reuse, not disposal, which may be a disincentive to keep green material out of the waste stream.
7. Using organic materials to reduce greenhouse gas emissions at landfills is currently being researched
8. The Department of Toxic Substances Control is re-examining Auto Shredder Waste (ASW), and its reclassification as a hazardous waste would require shredder waste to be treated so it is not hazardous or to be disposed in a Class 1 landfill.

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[1] Title 27 California Code of Regulations (CCR), Section 20680 . Section 20690 (a) describes general requirements of ADC and Section 20690 (b) provides specific requirements for the eleven approved ADC material types in California.

[2] Public Resources Code Section 41781.3 (a) The use of solid waste for beneficial reuse in the construction and operation of a solid waste landfill, **including use of alternative daily cover**, which reduces or eliminates the amount of solid waste being disposed pursuant to Section 40124, shall constitute diversion through recycling and shall not be considered disposal for the purposes of this division.

EXHIBIT A

This paper will provide a brief history of ADC regulations in California, ADC types and specifications, ADC in other states, current ADC use in California, organic materials processing infrastructure, and ADC regulatory issues identified by California stakeholders.

ADC Regulations History in California

Federal solid waste regulations require owners or operators at municipal solid waste landfills to cover disposed solid waste with six inches of earthen material at the end of the operating day to control odors, vectors, fires, litter, and scavenging.[3] This requires either excavating soil at the landfill site or importing soil. Many landfills do not have adequate amounts of soil available on site and must import soil for daily cover which can have negative environmental impacts (burning fossil fuels during transportation, generation of greenhouse gases, increased traffic, etc.) 40 CFR 258.21 (b) allows states to approve alternative materials of an alternative thickness if landfill operators demonstrate that the alternative material and thickness will control odors, vectors, fires, litter, water infiltration, and scavenging. These alternative materials are referred to as alternative daily cover, and landfill operators in California have been using ADC since the early 1990s.

The following is a summary of the Board's actions in developing regulations associated with ADC:

- On May 17, 1990, the Board adopted "Procedural Guidance for the Evaluation of Alternative Cover," which allowed ADC use on a case-by-case basis.[4] Operators performed site-specific demonstration projects to establish the suitability of one or more ADC materials as cover. LEAs monitored the demonstration projects for compliance with State minimum standards and cover performance standards. Operators submitted final reports at the conclusion of the demonstration projects, and the LEA, with assistance from Board staff, reviewed and approved the final reports to determine if the demonstration projects were successful.

- In December 1993, the Board adopted policy that allowed the use of waste-derived ADC to be considered diversion. The policy had three basic elements: (1) successful completion of a year-long demonstration project; (2) a limit on the amount of ADC allowable for disposal reduction to not exceed the amount of soil required for the daily cover in the facility permit; and (3) jurisdictions were limited to claiming 7 percent of their diversion rate from using ADC. In the first version of the Disposal Reporting Regulations, adopted at the end of 1994, ADC was not considered disposal, but the Office of Administrative Law disapproved this portion of the regulations, claiming the statute allowed the Board to consider ADC as diversion or disposal, but not a combination of diversion and disposal. The Board then removed the 7 percent limit from the regulations which was approved by OAL in early 1995.[5]

- The Natural Resources Defense Council filed a lawsuit claiming that ADC use as diversion was not legal. This lawsuit was resolved with the passage of Assembly Bill 1647 (Bustamante, Chapter 978, Statutes of 1996) which stated that the use of waste-derived ADC constitutes diversion through recycling. AB 1647 required the Board to adopt regulations for the use of ADC considering: (1) conditions established in past policies on ADC; (2) conditions necessary to provide for the continued economic development, economic viability, and employment opportunities provided by the composting industry in the state; and (3) performance standards on limitations on maximum functional thickness necessary to ensure protection of public health and safety consistent with State minimum standards.[6]

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[3] Title 40, of the Code of Federal Regulations (CFR), Part 258.21
[4] Feb. 11, 1997 Board Meeting, Agenda Item 15
[5] March 18, 2008 Board Meeting, Agenda Item 7, Attachment 1
[6] March 18, 2008 Board Meeting, Agenda Item 7, Attachment 1

- To comply with AB 1647, Board Members adopted regulations at their meeting on July 23, 1997. On Dec. 31, 1997, staff submitted the rulemaking file for the six subsections to OAL for approval. OAL approved these regulations on Feb. 3, 1998. These regulations (Section 20690 (b)) established all disposal site standards governing the use of ADC. These standards were based on previous Board policy and site-specific demonstration projects of ADC materials conducted by landfill operators between 1988 and 1995. The regulations require that any potential use of a new ADC material and listed ADC material used in a manner different from the standard be subject to a site-specific demonstration project approved by the LEA with concurrence at the Board staff level. Use of listed ADC materials in accordance with the prescribed standards does not require a site-specific demonstration project but does require the LEA to review and approve a request to use ADC for each site.[7]
- A number of cases of ADC use inconsistent with regulations have been brought to the attention of the Board. In July 2001, Board Members heard issues related to year 2000 ADC use. The reporting of ADC under the Disposal Reporting System showed an increase in green material ADC use.[8] Board staff investigated nine facilities in 2001 and determined seven facilities misreported ADC use and two facilities had used ADC inconsistent with regulations by using more than the allowed thickness. Staff conducted another ADC investigation at nine landfills in 2002 and determined that some operators were mixing two or more ADC materials; layering two or more ADC materials; inadequately pre-processing ADC feedstock prior to use; stockpiling & reusing ADC; and inaccurately describing ADC use in the Report of Facility Information.[9] Board staff generally found there was inconsistent application of the requirements relative to the review and approval of ADC use and that many Reports of Disposal Site Information (RDSI) were not amended as required. The investigation findings were addressed (as verified by inspections), and Board staff worked with LEAs to ensure they were taking appropriate action to gain compliance with RDSI requirements.

- ADC regulations were revised in 2004. Major changes included: specifying pre-processing and grain size requirements for green material and construction and demolition ADC; minimizing contamination of ADC with waste and other ADC materials; disallowing the blending or layering of different types of ADC without demonstration projects and EA approval; changing sludge and compost compaction thickness requirements; changing definitions of green material and construction and demolition ADC; clarifying beneficial reuse of solid waste at landfills; and revising RDSI regulations and specifying ADC use in the RDSIs.

ADC Types and Specifications

There are eleven types of ADC described in regulation. Some are specifically manufactured (tarps/films, foam, and sprays), while other ADCs are waste-derived (ground green material, shredded tires, sludge, etc.) The following are the 11 ADC material types described in regulations (Title 27 CCR 20690 (b) (1-11))

1) Geosynthetic Fabric or Panel Products (Blankets);
2) Foam Products;
3) Processed Green Material;
4) Sludge and Sludge-Derived Materials;
5) Ash and Cement Kiln Dust Materials;

[7] March 18, 2008 Board Meeting, Agenda Item 7, Attachment 1
[8] July 25-26, 2001 Board meeting, Agenda Item 24
[9] Dec. 10-11, 2002 Board Meeting, Agenda Item 28 and June 17-18, 2003 Board Meeting, Agenda Item 28

6) Treated Auto Shredder Waste;
7) Contaminated Sediment, Dredge Spoils, Foundry Sands, Energy Resource Exploration and Production Wastes;
8) Compost Materials;
9) Processed Construction and Demolition Wastes and Materials (C&D);
10) Shredded Tires; and
11) Spray Applied Cementitious Products.

Board regulations require specifications on ADC material application relative to depth. Exceeding the maximum depth is considered noncompliance and the material used in excess would be considered disposed. LEAs enforce thickness limits on individual ADC types to ensure compliance with the regulations. Foam Products, Spray Applied Cementitious Products, and Geosynthetic Fabric or Panel Products do not have thickness requirements.

Other ADC materials may be approved by Board Members on a case-by-case basis. If a landfill operator proposes to use an ADC material not included in regulations specified in subsection 20690(b)(1-10), a site-specific demonstration project is required. Operators can only use material for ADC that can legally be disposed, and all ADC types must be approved by the Enforcement Agency in writing prior to use. Table 1 provides a brief description of the Board-approved ADC material types.

Table 1
Board-Approved ADC Materials with Application, Thickness, and Grain Size Requirements

Board-Approved ADC	Application/Thickness/Grain Size Requirements
Geosynthetic Fabric or Panel Products (Blankets)	Must be removed from the waste and the waste covered with new waste or approved cover materials within 24 hours of product placement unless product is non-reusable or EA approves use beyond 24 hours.
Foam Products	Must be covered with waste or other approved cover materials within 72 hours of application. Cannot be applied if 40 percent chance of precipitation is forecast within 8 hours of application.
Processed Green Material	Cannot be exposed for greater than 21 days. Grain size specification by volume: 95 percent less than 6 inches minimum. Compacted thickness of 6 inches and average compacted thickness of less than or equal to 12 inches.
Sludge and Sludge-Derived Materials	Minimum of less than or equal to 12 inches.
Ash and Cement Kiln Dust Materials	Minimum compacted thickness of 6 inches and average compacted thickness of less than 12 inches.
Treated Auto Shredder Waste	Minimum compacted thickness of 6 inches and average compacted thickness of less than 24 inches.
Contaminated Sediment, Dredge Spoils, Foundry Sands, Energy Resource Exploration and Production Wastes	Minimum compacted thickness of 6 inches and average compacted thickness of less than 12 inches.
Compost Materials	Grain size specification by volume: 95 percent less than 12 inches and 50 percent less than 6 inches as determined by the EA. Minimum compacted thickness of 6 inches and average compacted thickness of less than or equal to 12 inches.
Processed Construction and Demolition Wastes and Materials	Grain size specification by volume: 95 percent less than 6 inches minimum. Minimum compacted thickness of 6 inches and average compacted thickness of less than 18 inches.
Shredded Tires	Cannot be applied when 40 percent chance of precipitation is forecast within 8 hours of application. 50 percent by volume is smaller than 6 inches in length and no individual pieces are greater than 12 inches in length.

Spray Applied Cementitious Products	Cannot be applied when 40 percent chance of precipitation is forecast within 8 hours of application.

Landfill operators must file a Report of Disposal Site Information (RDSI) with the EA to identify cover material quantities required from on-site sources, excavation sequence of the site, and stockpile locations if stockpiled for a significant amount of time. The RDSI must describe ADC and beneficial reuse waste types, processing methods, alternative processing or grain size specifications if applicable, operations methods, and applicable engineering, or other standard practices . The operator must estimate the tonnage of these materials that will be used based on waste types, applicable cover-to-waste volume ratios, applicable density conversion factors, engineering specifications, methods to minimize contamination, or other pertinent information. The RSDI must also contain the cover frequency proposed or the alternative daily cover proposed for use in lieu of soil as daily cover.[10]

ADC in Other States

Staff informally surveyed several states on their ADC policies. All states responding to the survey allow ADC use at landfills, but ADC material types vary by state. Table 2 is a summary of the responses (see Attachment 1 for more detailed responses).

Table 2
Commonly-Used ADC Material Types in Other States

State	Commonly-Used ADC Material Types	Site-Specific Demonstration Projects Required	ADC Diversion Credit
Connecticut	Polluted soil (i.e., contaminated soil); treated polluted soil; plastic membranes or tarps; sprayed on foams; sprayed on slurries; casting sands; incinerated sewage sludge ash; dredge spoils; etc.	Yes	
Idaho	Chipped tires meeting size requirements, tarp-o-matic & posi-shell.	No	No
Indiana	Altered tires, wood chips, compost, foundry sand, geotextile, plastic tarpaulin, dewatered publicly owned treatment works sludge, dewatered paper sludge. petroleum contaminated soil, soil contaminated with vegetable oil	Yes	Considered reuse
Maryland	Tarps, municipal incinerator ash, sewage sludge/soil mix, petroleum contaminated soil, auto shredder fluff, and Recovermat, a proprietary cover made of ground-up construction and demolition materials	Yes	No
Massachusetts	Sand blast grit, C&D fines, aggregate, short paper fiber, mixed fill, baghouse fines from asphalt batching plant, Freedman scrap wire casings, sludge ash, WTP residuals, pond sediments, contaminated soil, processed glass aggregate, coal bottom ash,, spent biofilter compost, dredged sediments, C&D residual wood, processed fluorescent glass	Sometimes	No
Michigan	Spray-on products, chipped tires, wood chips, ash from combustion of coal or wood, ground shingles and other material that do not contain friable asbestos, aluminum sludge from treatment of potable water at POTWs, foundry sand, dredge spoils, paper mill sludge, contaminated soil from leaking underground storage tanks containing petroleum products, auto fluff	Sometimes	No
Missouri	Tarps/geotextiles, tire chips/soil (50/50 mixture), fly ash/bottom ash mixture (up to 50 percent bottom ash), spray-applied (topcoat and similar products; Posi-shell), petroleum contaminated soil, Other types of contaminated soil, woods chips/soil (50/50 mixture) virgin coal/soil (50/50 mixture), foundry sand/soil (50/50 mixture)	Sometimes	No
Nebraska	Wood chips/soil mixture, petroleum contaminated soil, slag, auto fluff, tire shreds/chips, 4 mil polyethylene plastic tarp, cob ash, 60 mil tarp, foundry sand, commercial spray-on cover	Yes	Not considered disposal
New York	Petroleum-contaminated soils are major ADC use. Also use MSW/wood ash, aggregate/concrete/glass, processed C&D, soil (clean), POTW incinerator ash, paper mill sludge, industrial waste, Plattco sand, shredder fluff, wood/wood hhips, industrial waste, foundry sand, powdered glass, sewage sludge, tire chips	Usually not required	No
Ohio	Slurries, tarps, contaminated soil, foundry sand, coal combustion bottom ash, slag, and certain industrial residuals such as filter cakes.	Yes	No
Oregon	Commercial products such as geosynthetic tarps, and indigenous waste materials such as paper sludge, auto shredder fluff, and spent refractory (alumina brick).	Yes	No disposal fee on ADC
Rhode Island	C&D screenings, auto shredder residue, dredge spoils, contaminated soil, incinerator ash, slag and foundry sand , Recovermat (patent process that produces ground C&D waste) and posi-shell.	Yes	No
South Carolina	No list of pre-approved materials. State has allowed automobile shredder fluff, mixtures of wood-waste and soil (50-50 mix) some types of commercial sprays such as top-coat, and tarps	Yes	No
Utah	Non-hazardous contaminated soil, tarps, plastic sheets, foam products, products created from cement kiln dust, incinerator ash, non-hazardous auto shredder residue not otherwise regulated by 40 CFR Part 761, chipped waste tires, and spray-on materials.	No	No
Washington State	Alternative materials of an alternative thickness other than at least six inches (15 centimeters) of earthen material may be approved by the jurisdictional health department		
Wisconsin	Foundry sand, auto shredder fluff, some papermill sludges, contaminated soils bottom ash and slag.	Sometimes	No tipping

[10] Title 27 CCR 21600 (b) (6) (A) (B) (C)

			fee on ADC
Wyoming	Any cover including no less than six inches of compacted soil or any alternative material approved by the administrator to adequately control infiltration, disease vectors, fires, odors, blowing litter, and scavenging.	Sometimes	No

ADC Use in California

ADC use has increased approximately 129 percent since 1998 (from 1.7 million tons in 1998 to 3.9 million tons in 2007) while statewide disposal has increased approximately 6 percent (from 37.4 million tons in 1998 to 39.6 million tons in 2007). Table 3 illustrates statewide ADC use by material type.[11]

Table 3
Alternative Daily Cover Use in California by Material Type: 1998 - 2007

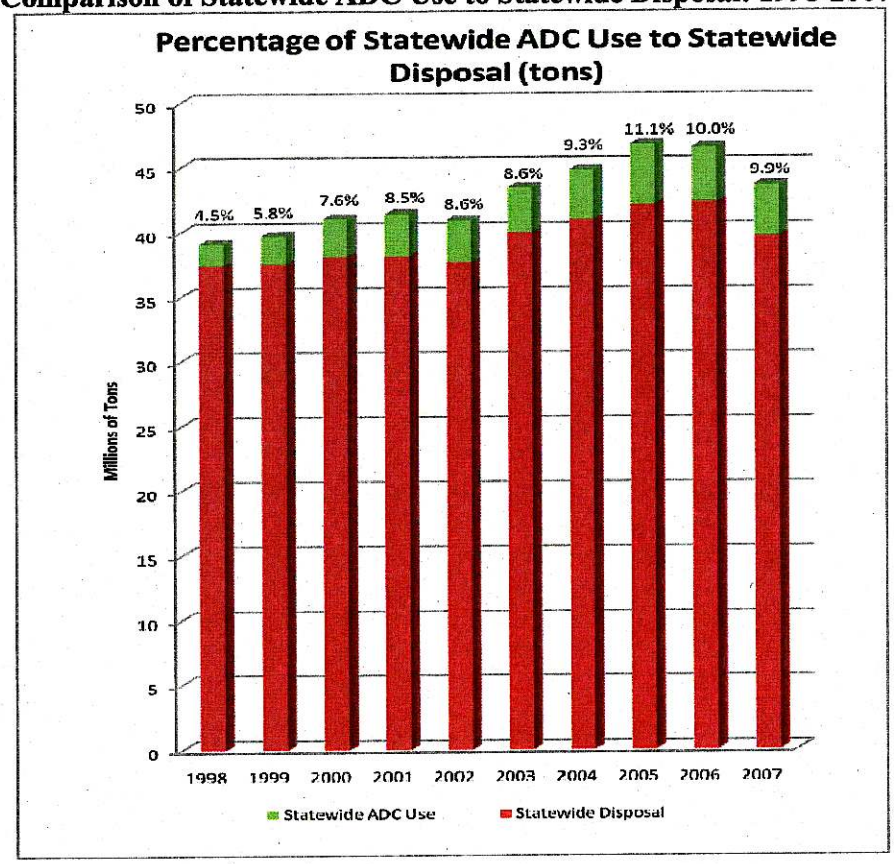
YEAR	ASH	AUTO SHREDDER WASTE	C &D	COMPOST	CONTAMINATED SEDIMENT	GREEN MATERIAL	MIXED	OTHER	TIRES	SLUDGE	TOTAL
1998	8,385	162,641	67,230	0	95	1,083,697	11,639	10,789	33,874	292,631	1,670,982
1999	7,445	237,256	188,920	472	17	1,381,123	4,783	20,911	11,333	320,546	2,172,805
2000	39,166	276,783	557,976	6,340	581	1,647,603	54,886	34,957	13,759	248,130	2,880,182
2001	35,226	349,827	567,599	13,575	69,170	1,962,770	31,394	31,112	17,188	152,887	3,230,748
2002	15,022	388,250	353,148	4,005	17,286	2,196,849	42,419	31,332	24,217	171,825	3,244,353
2003	4,441	442,752	209,729	8,473	0	2,394,595	13,420	63,156	19,468	291,262	3,447,296
2004	2,873	412,901	168,170	2,106	0	2,630,902	43,154	107,924	66,139	364,203	3,798,373
2005	7,073	683,108	326,467	1,546	40	3,023,306	26,271	214,906	36,205	350,751	4,669,674
2006	2,255	683,064	383,619	0	77	2,656,850	28,145	126,052	40,931	298,998	4,219,992
2007	1,566	632,495	358,784	3,379	40,960	2,307,255	12,588	172,311	66,042	326,680	3,922,060

[11] http://www.ciwmb.ca.gov/LGCentral/Rates/Graphs/RateTable.htm The Board has tracked ADC use since 1995 but detailed ADC material type data was not collected prior to 1998.

Statewide ADC use in comparison to statewide disposal increased from1998 to 2005 but has been decreasing since 2006 (See Table 4). The increase in ADC use may be partly attributable to the 1998 regulation revisions that allowed landfill operators to use Board-approved ADC types without having to perform site-specific ADC demonstration projects.

Table 4[12]

Comparison of Statewide ADC Use to Statewide Disposal: 1998-2007



Green material (59 percent), Auto Shredder Waste (16 percent), Construction & Demolition (9 percent), and Sludge (8 percent) are the largest ADC material types used today in California. Table 5 shows the total statewide ADC use by material type at Board-permitted landfills for 1998 through 2007. The majority of ADC use is in Southern California and the San Francisco Bay Area (Table 6).

[12] CIWMB Disposal Reporting Data

Table 5[13]

Statewide ADC Use by Material Type: 1998-2007

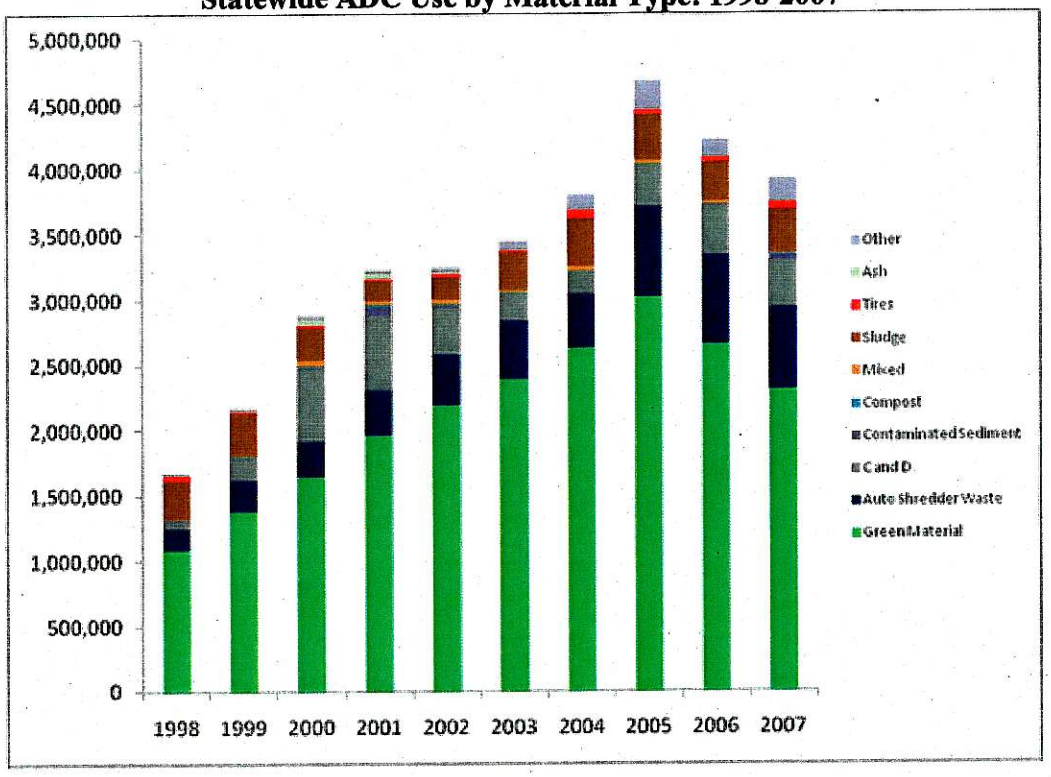
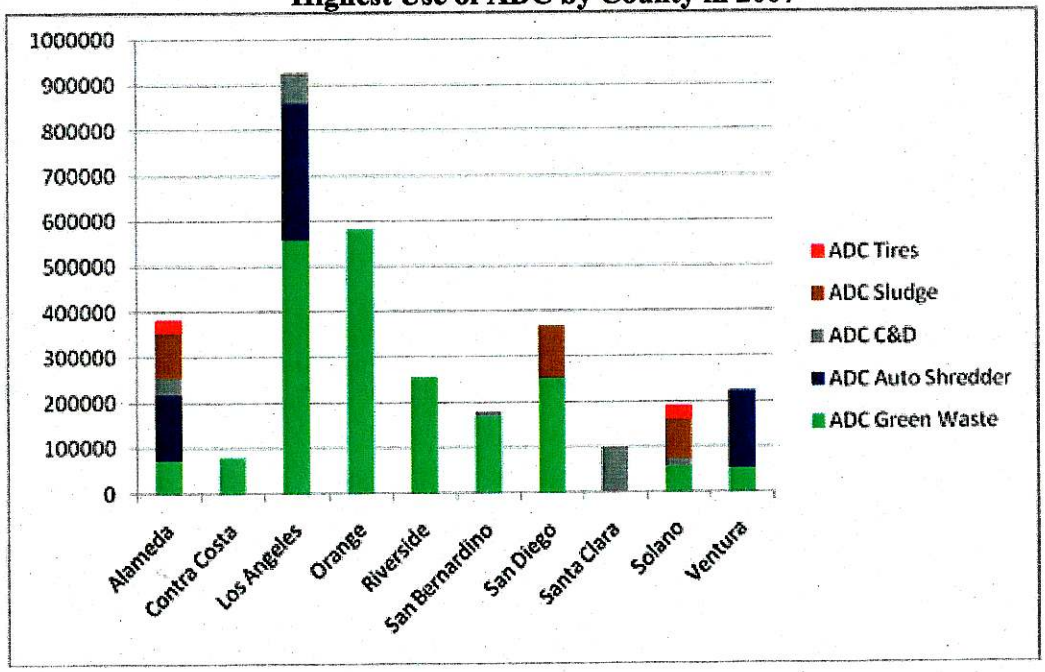


Table 6[14]

Highest Use of ADC by County in 2007

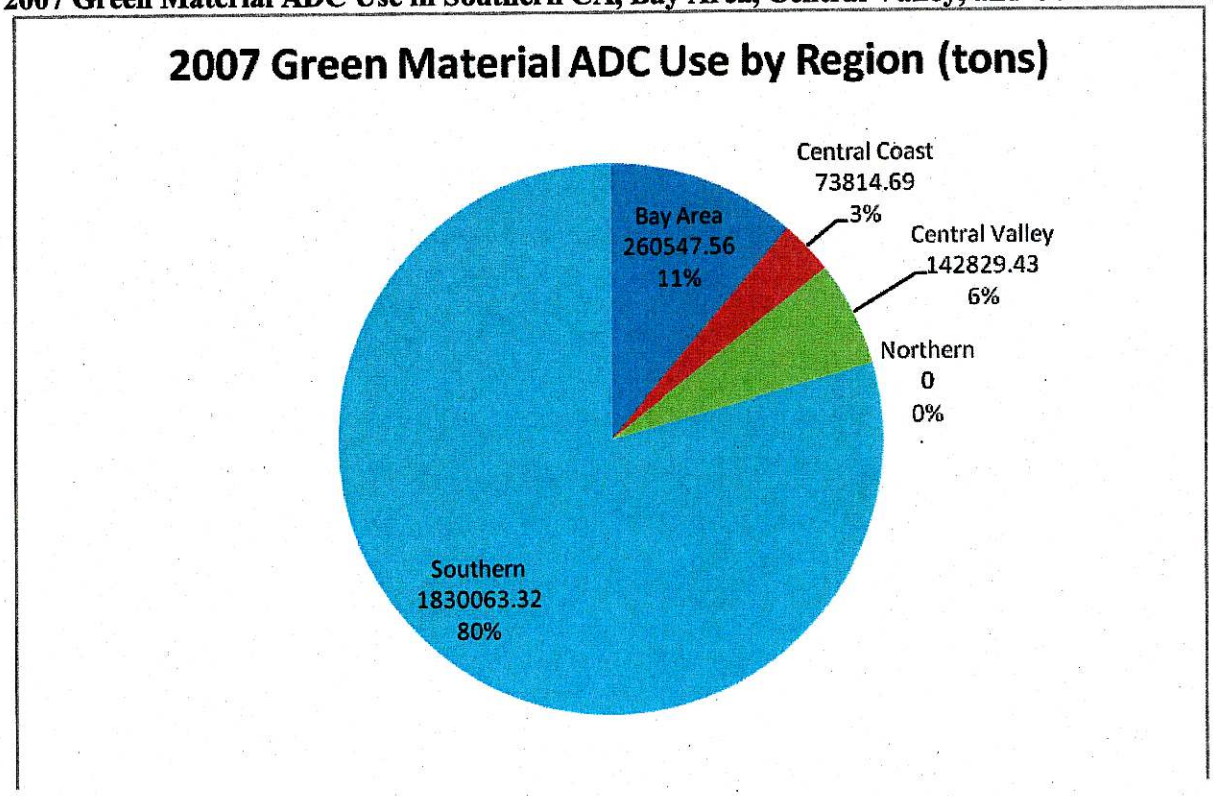


[13] CIWMB Disposal Reporting Data
[14] CIWMB Disposal Reporting Data

Green material ADC use has doubled since 1998 (from 1.1 million tons in 1998 to 2.3 million tons in 2007) but has been decreasing since 2006 along with statewide disposal. In 2007, the Southern Region used the vast majority of green waste ADC in the state, accounting for 1.83 million tons (approximately 80 percent of the statewide total). The San Francisco Bay Area Region used 0.26 million tons (approximately 11 percent of the statewide total), and the Central Valley Region used 0.14 million tons (approximately 6 percent of the statewide total). The Central Coast Region used 0.07 million tons (accounting for only 3 percent of the statewide total) and the Northern Region used only a negligible amount. (See Table 7)

Table 7[15]

2007 Green Material ADC Use in Southern CA, Bay Area, Central Valley, and Central Coast



Determining the impact of green material ADC use on the compost/mulch industry has been difficult. At the Jan. 25, 1995 Board meeting, staff presented scenarios estimating maximum green waste ADC use in California. Green waste ADC use estimates were based on variety of assumptions, such as small landfills would not use green waste ADC because of the cost of grinding equipment, many of these landfills were expected to close due to Subtitle D requirements, and the estimated use of other ADC material types at landfills. Green waste ADC estimates were calculated using three statewide total depths: 6 inches, 12 inches, and 18 inches. Based on these assumptions, Board staff estimated maximum green waste ADC use as follows:[16]

- Statewide total depth at 6" 644,087 tons
- Statewide total depth at 12" 1,388,174 tons
- Statewide total depth at 18" 2,082,261 tons

[15] CIWMB Disposal Reporting Data

[16] Jan. 25, 1995 Board Meeting, Agenda Item 10

However, disposal reporting for 1995 showed 390,201 tons of green waste ADC, and preliminary reporting for 1996 showed 560,266 tons of green waste ADC.[17] The results indicated that the amount of green waste used as ADC was well below the maximum projections of 2 million tons. Based on the California Organic Recycling Council's (CORC) surveys of their members, production of compost products increased during this time frame from 2.1 million tons in 1995 to 4.2 million tons in 1996.[18]

Board staff presented two discussion items to Board Members in 2008 in regards to green material ADC. On March 18, 2008, Board staff presented options which included bans and phase-out on the use of ADC or disposal of organics in landfills, changes to diversion credits, disposal fees and surcharges, and increased inspection and enforcement. On June 17, 2008, Board staff presented results from the ADC Policy Working Group and staff analysis and suggestions which included : 1) encouraging local jurisdictions to implement re-use and purchase policies and programs for organics/compost; 2) disposal and tipping fees on ADC; 3) requiring local jurisdiction plans to include a diversion processing capacity provision; 4) promoting local contracting mechanisms; and 5) developing timeframes and mechanisms for phasing out green material ADC diversion credit. Board staff presented a timeline for these activities in an update of the Organics Roadmap I & II at the Dec. 16, 2008, Board meeting and continue to with work with stakeholders on these issues.

Many stakeholders have stated that counting green material ADC as beneficial reuse and not disposal has led to increased use of green material ADC. Stakeholders further state that use of green waste as ADC has had a negative impact on the compost infrastructure and other industries that compete for green material feedstock. Other stakeholders indicate that counting ADC use as disposal would negatively impact some jurisdiction diversion rates and remove the some of the incentive to use green material beneficially at landfills. In addition, some stakeholders have pointed out that there are inadequate markets and/or processing capacity for green waste other than ADC in Southern California due to difficulties encountered in developing and gaining local approvals for new facilities, lack of suitable land, strict air quality regulations, and communities unwilling to host processing facilities.

Organic Materials Processing Infrastructure

Landfills are required to report ADC use via the Board's Disposal Reporting System, but compost and mulch facilities and operations are not required to submit production data to the Board. In order to obtain a better understanding of California's organic materials management industry, the Board conducted surveys in 2001, 2003, and 2008 to obtain data on the number of producers, feedstock sources, products, and markets for compost and mulch. Participants were grouped into two major categories: composters (entities that actively compost organic material) and processors (entities that process material but do not intentionally or actively compost the materials they produce.) Results from the 2008 survey include:[19]

- 115 composters and 115 processors participated in the survey.
- Approximately 9.3 million tons of organic materials were processed in California.
- Major product categories:
    - Compost (33 percent)
    - ADC (23 percent)
    - Boiler Fuel (22 percent)
    - Mulch (13 percent)

[17] Feb. 26, 1997, Board Meeting, Agenda Item 26
[18] Feb. 26, 1997, Board Meeting, Agenda Item 26, Attachment 7
[19] Third Assessment of California's Compost- and Mulch-Producing Infrastructure —Management Practices and Market Conditions, May 2009

Currently, there are approximately 313 active compost facilities/operations and processors in California: 122 Permitted facilities and 210 EA Notification.[20] The Board is also funding the Recycling and Waste Management Infrastructure project , which will provide a centralized source of information on California solid waste management and recycling infrastructure, including compost and mulch operations (scheduled to be completed in spring 2010). Data obtained from these research projects may help quantify the impact of green material ADC use on the compost/mulch industry in California.

ADC Regulation Issues

Board staff interviewed landfill operators, Local Enforcement Agencies, consultants, environmental groups, and other Board staff to identify the issues related to ADC use at landfills. Staff also visited landfills, contacted representatives from other states, and performed a literature search to gather comprehensive information on ADC. Based on the information gathered from these sources, staff has identified the following ADC issues and provided potential options to address these issues:

1. The optimum amount, depth, and quality of Board-approved ADC may need to be more fully researched.

2. The specifications for some ADC materials make it difficult to evaluate compliance through periodic inspections. The current regulatory regime could allow the misuse of ADC to go undetected.

3. ADC may contain contaminants (materials that are not allowed to be included in the ADC). For example, many feedstocks for C&D ADC include materials that are not allowed in C&D ADC, such as wallboard.

4. Many stakeholders believe that the Board's site-demonstration project requirements for new ADC materials lack specific requirements on how to conduct the demonstrations. Several landfills are implementing ADC demonstration projects using Material Recovery Facility (MRF) and C&D fines. The fines are produced from various feedstocks and processes, and the constituents of the material can vary greatly. A procedure for evaluating MRF and C&D fines as ADC needs to be refined and tested.

5. The definition of Green Material in the compostable materials handling regulations is different than the ADC definition of Processed Green Material.

6. The CIWMB's Strategic Directive 6.1 aims to reduce the amount of organics in the waste stream by 50 percent by 2020. Organic waste-derived ADC is considered beneficial reuse, not disposal, which may be a disincentive to keep green material out of the waste stream.

7. Using organic materials to reduce greenhouse gas emissions at landfills is currently being researched.

8. As of the writing of this paper, the Department of Toxic Substances Control was in the process of re-examining Auto Shredder Waste (ASW), and its reclassification as a hazardous waste would require shredder waste to be treated so that is not hazardous or to be disposed in a Class I landfill.

[20] Solid Waste Information System, April 16, 2009

The following section examines the above issues and proposes potential options to address these issues.

1. ***The optimum amount, depth, and quality of Board-approved ADC may need to be more fully researched.***

The Board adopted "Procedural Guidance for the Evaluation of Alternative Covers" on May 17, 1990. Site-specific demonstration projects were required to establish that an ADC can function as a barrier to the 1) emergence or attraction of vectors, 2) progression of landfill fires within the landfill, 3) escape of odor, and 4) excess infiltration , and 5) scavenging. Streamlined approval procedures were established for two successfully tested ADC materials, geosynthetic blankets (LEA Advisory No. 10, March 7, 1994) and shredded green material (LEA Advisory No. 19 (Revised), May 15, 1995) both of which have been superseded by Advisory 48. Approximately 110 site-specific demonstration projects were conducted at approximately 80 municipal solid waste landfills in California. The most common ADC materials used included geosynthetic blankets (55 projects) and shredded green material (27 projects). Other ADC materials used included foam products, sludge, ash, and treated auto shredder waste.[21] ADC regulations, effective on Feb. 3, 1998, were based on the results of ADC demonstration projects and established a number of ADC material types that did not require additional demonstration prior to making a request to use at a site. The regulations also included the ability to continue to propose demonstrations for other ADC materials types not included the regulations.

Demonstration project evaluation was based primarily on visual observations on the performance of ADC made during periodic inspections There was no one standardized approach to the evaluation, and no comprehensive testing of the materials performance. A 1993 U.S. EPA report indicated that evaluating the effectiveness of ADC was generally "based on subjective comparisons with soil cover."[22] Board staff analysis of ADC demonstrations took into account several studies published in the early 1990s (U.S. EPA, Allegheny College, George Tchobanoglous, GeoSyntec Consultants). Staff is not aware of any recent studies on the performance of ADC materials.

Given the wider use of ADC materials and degree of variation in the type, quality, and quantity of material used at landfills, there is less certainty that the demonstration projects conducted in the 1990s upon which the original set of ADC requirements was based is still applicable to the amount and types of ADC used today. A re-evaluation of the current suite of ADC materials should be undertaken to determine the optimum amount, depth, quality, etc. that is required to meet the performance requirements of ADC as well as to conserve landfill capacity. A set of measurable ADC performance parameters would need to be identified and used in a systematic evaluation of all currently approved material types. In addition, ADC standards should not negatively impact landfill operations, such as generating landfill gas, exposing workers to hazardous materials, etc.

Option 1: Require landfill operators to research the optimum amount, depth, and quality of ADC materials.

Option 2: Board staff partners with LEAs and operators to research the optimum amount, depth, and quality of ADC materials.

Option 3: Board conducts research on the optimum amount, depth, and quality of ADC materials.

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[21] http://www.ciwmb.ca.gov/RuleArchive/1998/ADC/isoradc.doc

[22] *Use of Alternative Materials for Daily Cover at Municipal Solid Waste Landfills*, prepared for U.S. EPA by Pittsburg University, PA September 1993

2. ***The specifications for some ADC materials make it difficult to evaluate compliance through periodic inspections. The current regulatory regime could allow the misuse of ADC to go undetected.***

Processed green material, sludge or sludge-derived materials, ash and cement kiln dust, treated auto shredder waste, contaminated sediment, dredge spoils, foundry sands, energy resource exploration and production wastes, compost materials, construction and demolition wastes, and shredded tires have minimum and maximum compacted thickness, and some also have size requirements and material type limits (See Table 1). Subsection 20690 (a)(7) requires waste-derived materials used as ADC to be restricted to quantities no more than necessary to meet the performance requirements for ADC.

Board Members decided on Jan. 25, 1995, that the maximum average thickness of shredded green waste should not exceed 12 inches. Regulations approved on Feb. 3, 1998, required that processed green be restricted to a minimum compacted thickness of six inches and average compacted thickness of less than or equal to 12 inches. ADC demonstration projects and input from the LEAs and landfill operators indicated that 12 inches of shredded green material functioned as suitable cover and protected public health and safety. Green material ADC applied at significantly higher thicknesses could increase the threat of landfill fires with drying and could cause unacceptable odors with decomposition. Landfill operators must balance the need for controlling vectors versus preserving landfill capacity.[23]

Board staff considered a prescriptive limit on maximum ADC use (i.e. tonnage limit). However, landfill operations vary in acceptable waste-to-cover material volumes so that a prescriptive limit would be difficult to establish on a statewide basis. Some stakeholders have indicated that there are physical and practical limitations that prevent the application of excessive thicknesses of ADC, such as equipment slippage, reduced compaction, loss of airspace, contractual agreements, and loss of the associated disposal fees. Other stakeholders indicated that the amount of alternative daily cover should be monitored closely to avoid excessive thickness. Concerns related to excess alternative daily cover include: increased/inaccurate diversion credit, lost landfill capacity, wasted materials (especially green waste), and misapplication (intentional/or unintentional).[24]

Monitoring ADC use compliance with the thickness requirements at landfills is problematic because inspections are conducted once a month and the use of ADC can only be evaluated during the inspection day. There is no standardized method to determine if ADC use is consistent with the standards on an ongoing basis. ADC monitoring could involve numerous measurements, prescriptive standards or complicated sampling procedures, rather than visual observations and performance evaluations, and this would impact the amount of time and resources required for additional monitoring. Operators are required to report in their Reports of Disposal Site Information a tonnage estimate of ADC materials that will be used based on waste types, applicable cover-to-waste volume ratios, applicable density conversion factors, engineering specifications, methods to minimize contamination, or other pertinent information.

Option 1: Establish in regulation a refuse-to-ADC ratio at landfills with high refuse-to-ADC ratios warranting further investigation or require operators to record working face size and corresponding ADC use on the working face to enable LEAs to determine overuse or underuse.

Option 2: Leave thickness requirements at current levels and improve methods for monitoring.

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[23] http://www.ciwmb.ca.gov/RuleArchive/1998/ADC/

[24] Feb. 11, 1997, Permitting and Enforcement Committee Meeting, Agenda Item 15

Option 3: Tighten requirements in the Report of Disposal Site Information so that operators provide better information on ADC use.

3. ***ADC may contain contaminants (materials that are not allowed to be included in the ADC). For example, many feedstocks for C&D ADC include materials that are not allowed in C&D ADC, such as wallboard.***

Landfill operators are required to use green material as ADC that meets the definition and specifications in (20690 (b) (3)).[25] As seen by the below pictures, there have been occurrences when green waste ADC did not meet the definition and specification requirements.

Green Material ADC Contamination

Photos illustrating a variety of contaminants found in green material ADC at a landfill

Higher levels of green material contamination are often found in collection and processing systems where green materials are destined for ADC use. In addition, many jurisdictions are adding food waste to their curbside green waste collection programs, and green waste mixed with food material cannot be used as ADC. Processed Green Material in 20690 (b) (3) (A) does not specifically prohibit food material, and the Board may want to consider excluding food material in the definition of Processed Green Material in the future.

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25 20690 (b)(3) Processed Green Material

(A) For the purposes of this section, processed green material means any plant material that is either separated at the point of generation, or separated at a centralized facility that employs methods to minimize contamination. Green material includes, but is not limited to, yard trimmings, untreated wood wastes, paper products, and natural fiber products. Green material does not include treated wood waste, mixed demolition or mixed construction debris, manure and plant waste from the food processing industry, alone or blended with soil. Processed green material may include varying proportions of wood waste from urban and other sources and shall be ground, shredded, screened, source separated for grain size, or otherwise processed.

(B) Green material used for alternative daily cover shall be processed prior to being applied to the working face unless the green material to be used as alternative daily cover already meets the grain size specifications. Prior to spreading and compacting on the working face, processed green material shall comply with a grain size specification by volume of 95 percent less than 6 inches. Alternative processing and grain size specification requirements may be approved by the EA if the EA determines that the alternative meets the performance requirements of ¶(a)(2) and (a)(3) of this section and the CIWMB concurs.

(C) Processed green material shall be restricted to a minimum compacted thickness of 6 inches and average compacted thickness of less than or equal to 12 inches.

(D) Processed green material placed as cover shall not be exposed for greater than 21 days.

Processed C&D has a list of materials that can be included in ADC: rock, concrete, brick, sand, soil, ceramics, cured asphalt, lumber and wood, wood products, roofing material, plastic pipe, plant material when commingled from construction work, and fines derived from processing the above materials.[26] C&D ADC observed at landfills contain additional materials than listed in the definition of Processed C&D.

C&D materials often contain wallboard. Wallboard is not included in the definition of C&D ADC, and landfill operators must conduct site-specific demonstration projects utilizing ADC that includes wallboard. If the material proves effective, operators can request to use the material on an ongoing basis. It is staff's understanding that wallboard was excluded from C&D ADC because of concerns relative to the generation of hydrogen sulfide gas. Many landfills are now accepting large quantities of construction and demolition (C&D) debris in addition to municipal solid waste, and gypsum wallboard can generate hydrogen sulfide gas (H_2S) in a landfill.[27]

Option 1: Redefine ADC types to account for material variance.

Option 2: Base contamination level thresholds on volume instead of weight.

Option 3: Board sponsors a study of additional ADC material types.

Option 4: Leave definition of C&D ADC as is and continue to require landfill operators to conduct demonstration projects to ensure C&D ADC with gypsum wallboard can meet minimum standards for cover and not generate hydrogen sulfide

Option 5: Change definition of C&D ADC to include gypsum wallboard.

Option 6: Board researches hydrogen sulfide generation in landfills that receive C&D materials.

4. ***Many stakeholders believe that the Board's site-demonstration project requirements for new ADC materials lack specific requirements on how to conduct the demonstrations. Several landfills are implementing ADC demonstration projects using Material Recovery Facility (MRF) and C&D fines. The fines are produced from various feedstocks and processes, and the constituents of the material can vary greatly. A procedure for evaluating MRF and C&D fines as ADC needs to be refined and tested.***

Regulations require that any potential use of a new ADC material or listed ADC material used in a manner different from the standard be subject to a site-specific demonstration project approved by the LEA with concurrence at the Board staff level.[28] The following are suggested guidelines for ADC site-specific demonstration projects per LEA Advisory #48—Revised March 27, 1998:

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[26] 20690 (b) (9) Processed Construction and Demolition Waste and Material : *Processed construction and demolition wastes and materials used as alternative daily cover shall be restricted to the following materials: rock, concrete, brick, sand, soil, ceramics, cured asphalt, lumber and wood, wood products, roofing material, plastic pipe, plant material when commingled from construction work, and fines derived from processing the above materials.*

[27] http://www.gtp-merichem.com/support/technical_papers/municipal_landfills.php

[28] 27 CCR, Sections 20680, 20690.

A site-specific written proposal should be submitted describing, at a minimum:

- Responsible parties for the project and chain-of-command;
- Time frame of project;
- Material specifications, stockpiling, processing, placement procedures;
- Maximum time period of exposure as ADC or AIC and projected quantity of materials to be tested; and
- Expected ability of the material in meeting the performance requirements of 27 CCR 20690(a)

Board staff, in consultation with LEAs, may want to consider developing a standardized guidance document that spells out more clearly what should be in the demonstration project. The guidance document could address operational practices to be followed when using the ADC (how the ADC will be deployed and removed, wet and cold weather operations, high wind operations, run-off control, special filling methods), and require a detailed description of how the proposed ADC will be evaluated.

Several landfills are conducting ADC demonstration projects using MRF and C&D & fines. Many jurisdictions have enacted C&D recycling ordinances which require mandatory diversion percentages, and stakeholders have indicated that diversion goals are difficult to achieve without processing MRF and C&D fines and using them as ADC. MRF and C&D fines are difficult to process into homogeneous products because feedstocks are highly variable depending on the makeup of incoming loads as well as the process used (screen size, front screening versus secondary screens).

Staff have visited facilities throughout the state that are conducting demonstration projects using fines. Staff have observed a wide variety of constituents and sizes in the materials, including dirt, gypsum (wallboard), wood, glass, plastic, cell phones, batteries, plastic bags, polystyrene, tennis balls, caulk tubes, food waste, CRV containers, and hard plastics (see following pictures). Although the fines placed on the working face may resemble the waste it is covering ("waste on waste"), operators indicate that it performs adequately in its ability to control odors, vectors, litter, and scavenging.

MRF/C&D Processing Facility Fines

Photos illustrating typical constituents found in MRF/C&D processing facility fines

MRF Fines

Photos illustrating typical constituents found in MRF Fines using a 2 inch or greater screen

The types of constituents appear to be related to the screen size when processing the material. Smaller screen sizes (2" minus) seems to consistently produce material that is high in small grain inert material that looks and acts similar to a fine grain soil. The following pictures illustrate C&D fines processed through a 3/8 inch screen. The fines are currently being used in land application/soil amendment.

C&D Fines

Photos illustrating typical constituents found in C&D Fines using 3/8 inch screen

C&D fines often contain gypsum wallboard, and there are concerns about generation of hydrogen sulfide when the material gets wet. There is also concern about homes and commercial buildings constructed from the early 1900s to the 1970s often contained asbestos cement wallboard.[29] Most recently, wallboard imported from

[29] http://www.asbestos.com/products/cement/cement-wallboard.php
http://www.asbestos.net/asbestos-products/asbestos-wallboard.html

China has been found to readily produce hydrogen sulfide gas.[30] Hydrogen sulfide generation from processed C&D has been documented in Massachusetts and New York; C&D fines are considered unsuitable for ADC in Ohio due to significant potential for dust and asbestos fibers; and drywall must be removed prior to processing C&D fines in Minnesota (see Attachment 1). Testimony provided by stakeholders when the Board developed C&D and Inert Waste regulations indicated that more than 60 types of toxic and potentially toxic materials may be used on construction sites that frequently end up in C&D debris bins for management as waste.[31]

One study[32] indicates that wallboard provides sulfate ions and organic matter for sulfate-reducing bacteria (SRB) to produce a large concentration of hydrogen sulfide. Possible hydrogen sulfide control could be the addition of large amounts of drywall to buffer the pH out of the ideal SRB pH range or by adding crushed concrete either with the waste or as a cover layer.

Option 1: Board develops guidance document on site-specific ADC demonstration projects.

Option 2: Retain current demonstration guidelines in regulation

Option 3: Revise regulations to specify requirements on how to conduct ADC demonstration projects

Option 4: The Board establishes grain size specifications for MRF & C&D fines to reduce visible contaminants

Option 5: Require testing for asbestos, other hazardous materials, and gas generation as part of ADC demonstration projects and report findings. The results should help to determine if the materials types are suitable for ADC use.

Option 6: Require landfill operators to conduct demonstration projects to ensure C&D ADC with gypsum wallboard can meet minimum standards for cover and not generate hydrogen sulfide

5. *The definition of Green Material in the compostable materials handling regulations is different than the ADC definition of Processed Green Material.*

In the compostable materials handling regulations (Title 14, 17852 (a) (21)), green material means any plant material that is separated at the point of generation, contains no greater than 1.0 percent of physical contaminants by weight, and meets the requirements of section 17868.5. Green material includes, but is not limited to, yard trimmings, untreated wood wastes, natural fiber products, and construction and demolition wood waste. Green material does not include food material, biosolids, mixed solid waste, material processed from commingled collection, wood containing lead-based paint or wood preservative, mixed construction or mixed demolition debris.

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[30] http://www.theprovince.com/news/Toxic+wallboard+turning+Canada/1375780/story.html
http://www.chinesedrywall.com/uploads/Environ_report.pdf

[31] Aug. 12, 2002 Permitting and Enforcement Committee Meeting.
http://www.ciwmb.ca.gov/Agendas/MtgDocs/2002/08/00012716.pdf page 78

[32] *Hydrogen Sulfide Generation in Simulated Construction and Demolition Debris Landfills: Impact of Waste Composition.* Journal of Air & Waste Management Assoc. 56: pp. 1130-1138 August 2006

In the ADC regulations (Title 27, 20690 (b) (3) (A)), processed green material means any plant material that is either separated at the point of generation, or separated at a centralized facility that employs methods to minimize contamination. Green material includes, but is not limited to, yard trimmings, untreated wood wastes, paper products, and natural fiber products. Green material does not include treated wood waste, mixed demolition or mixed construction debris, manure and plant waste from the food processing industry, alone or blended with soil. Processed green material may include varying proportions of wood waste from urban and other sources and shall be ground, shredded, screened, source separated for grain size, or otherwise processed.

Although Board staff have not heard of major problems related to differences in the definitions between green material and processed green material, the definitions are not consistent and could cause some confusion in the field. For example, the definition of green material in the composting materials handling regulations does not include food material while the definition of green material in the ADC regulations does not specifically prohibit all types of food material, so some operators may conclude that the green material containing post-consumer food is acceptable for ADC use.

Option 1: Leave the current definitions of green material and processed green material in regulation.

Option 2: Make the definition of Processed Green Material in the ADC regulations the same as the Green Material definition in the compostable materials handling regulations.

6. ***The CIWMB's Strategic Directive 6.1 aims to reduce the amount of organics in the waste stream by 50 percent by 2020. Organic waste-derived ADC is considered beneficial reuse, not disposal, which is a disincentive to keep green material out of the waste stream.***

Board Members adopted a set of Strategic Directives on Feb. 13, 2007, including Strategic Directive 6.1 which aims to reduce the amount of organics in the waste stream by 50 percent by 2020. Current statute (Public Resources Code Section 41781.3) states that the use of waste-derived ADC constitutes diversion through recycling, and this policy appears to conflict with SD 6.1. However, this legislation also required the Board to adopt ADC regulations that consider "**conditions necessary to provide for the continued economic development, economic viability, and employment opportunities provided by the composting industry in the state.**"

The CIWMB held an Organics Summit on Oct. 10, 2007, with the purpose of exchanging ideas and developing a plan for the future for compostable and cellulosic organic materials. Staff assessed the various issues raised by stakeholders at the Organics Summit and developed the Organics Policy Roadmap which was presented to Board Members in December 2007. The Organics Roadmap identified six key issue categories that require more focused work and consideration by the Board: ADC policy; economic incentives; siting and capacity; regulatory and permitting; research; and education.

Board staff presented an ADC policy item to Board Members in March 2008 that included historical ADC usage, legislative and regulatory history, existing markets, and potential policy options. These options included: 1) increase fees on green material ADC use; 2) define green material ADC use as disposal, not beneficial reuse; and 3) continue emphasis on inspection and enforcement to address ADC overuse and misreporting.

At the March 11, 2008, meeting of the Strategic Policy Development Committee, the Committee directed staff to convene a workgroup to focus on developing five specific options for reducing green material ADC. At the June 17, 2008 Board meeting, staff presented the workgroup's analyses of the five options along with staff's analysis and suggestions.

- Option 1: Requiring local jurisdictions to implement re-use and purchase policies and programs for organics/compost.
- Option 2: Disposal and tipping fees on ADC.
- Option 3: Requiring local jurisdiction plans to include a diversion processing capacity provision.
- Option 4: Promoting local contracting mechanisms.
- Option 5: Developing timeframe and mechanism for phasing out green material ADC diversion credit.

Board staff is currently working with stakeholders to develop an "Organics Toolbox" to support municipal use of compost (Option 1) and include a local contract mechanism component in the organics toolbox to assist local governments in implementing contract provisions that support diversion of green materials from disposal at landfills (Option 4). Board staff is also developing a legislative concept on a 15-year diversion processing capacity requirement (Option 3), while Option 2 and Option 5 will require legislative and statutory changes.

Green material ADC use has increased from 1.1 million tons in 1998 to 2.3 million tons in 2007. Many stakeholders believe green material ADC use has increased because it does not count as disposal and helps jurisdictions meet their AB 939 diversion goal mandates. ADC is not subject to the Board's $1.40 per ton disposal fee, and this reduces potential funding for Board programs. Representatives of several composting facilities have also voiced their concern that green material ADC usage prevents an increase in their production of compost. Other stakeholders believe counting ADC as disposal would negatively impact jurisdiction diversion rates and preclude the beneficial use of green material in landfills. In addition, some claim there is inadequate processing capacity for green waste in Southern California and limited market for compost made from green waste due to difficulties encountered in permitting/developing new facilities (lack of suitable land, strict air quality regulations, NIMBYism).

Green material ADC use also raises environmental issues among stakeholders. Some stakeholders believe the decomposition of organic materials in landfills with anaerobic environments results in methane generation before landfill gas recovery systems can be installed, and methane is 23 times more powerful as a greenhouse gas than carbon dioxide. Other stakeholders believe green material ADC is beneficial in generating methane which can be captured and used as energy, and using soil as daily cover instead of green material ADC may interfere with efficiently capturing methane.

Green material ADC continues to spark controversy among stakeholders throughout the state. Most changes to existing ADC policy will require statutory amendments and consideration of regional market impacts, particularly in the Southern and Bay Area Regions.

Option 1: Monitor the Board's life cycle assessment of organics diversion alternatives study to determine how regulations are affected

Option 2: Pursuant to Public Resources Code Section 41781.3, the Board researches the economic impacts of green material ADC on the compost industry

Option 3: Board researches the impacts of using soil versus organic material ADC on landfill gas recovery and quantifies the amount of landfill gas generated using soil versus organic material ADC.

7. ***Using organic materials to reduce greenhouse gas emissions at landfills is currently being researched.***

Several studies are examining methane emissions at landfills and the potential of applying biocovers over the surface of landfills to reduce methane emissions. Below are summaries of some of this research:

The Compost Cover At Landfills Methane Emissions Reduction Demonstration Project
The Board is funding research to assess the long-term performance and effectiveness of using a biocover to help mitigate methane emissions over the surface of a landfill. The use of a biocover may potentially offer smaller landfills a cost-effective alternative for mitigating methane to comply with the California Air Resources Board's *Landfill Methane Control Measure*. Two demonstration cells will be constructed at the Yolo County Central Landfill: one will consist of fresh green material, and the other cell will utilize existing degraded green material that was used under a separate contract with the California Energy Commission (CEC), PIER Program. The project will include conducting field and laboratory testing; developing a predictive computer model; and developing a final report on biocover performance based on the results of the computer model and laboratory results.

Economic Analysis and Life Cycle Assessment of Diversion Alternatives
The Board is working with RTI International, R.W. Beck, Matthew Cotton, and Dr. Sally Brown to perform a life cycle assessment of organics diversion alternatives in support of the California Global Warming Solutions Act of 2006 (AB 32). The objectives of this project are to quantify greenhouse gas emission reductions from implementation of organic diversion alternatives, and to perform an economic analysis to determine the associated costs and savings of the selected alternatives on a regional and statewide basis.

A New Field-Validated Inventory Methodology for Landfill Methane Emissions
The California Energy Commission, in partnership with the Board and the Air Resources Board, is developing a methodology to quantify methane (CH4) emissions at landfills in the context of the California greenhouse gas inventory. The project shifts the focus from landfill CH4 generation modeling to identifying landfill CH4 emissions through daily, intermediate, and final cover materials at landfills which vary throughout California. This inventory methodology for landfill methane emissions relies on field-validated modeling of "net" emissions (including methane oxidation) rather than methane generation. This approach has fewer uncertainties than the previous indirect modeling methodology and can be directly field-validated. The project is scheduled to be completed in 2010.

Comparison of Use of Green Wastes as Alternative Daily Cover in Regulation Landfills and by Composting in Open Windrows and In-vessel Systems
The study examines the best available technology for processing green wastes. It consists of two parts: an in-depth study of the tonnages of green wastes processed by various aerobic composting methods and a multi-criteria analysis to identify the best of these methods; and a comparison of the environmental impacts of using green wastes as feedstock for aerobic composting or as Alternative Daily Cover in regulated landfills.

The CIWMB will await the results of these studies to help develop regulations and Best Management Practices to mitigate landfill gas emissions.

8. ***As of the writing of this paper, the Department of Toxic Substances Control is in the process of reexamining Auto Shredder Waste, and its reclassification as a hazardous waste would require shredder waste to be treated so that is not hazardous or to be disposed in a Class I landfill.***

Automobile Shredder Waste consists of seat covers, dashboards, carpet, seat cushion foam, bumper plastic, broken safety glass, wire, hoses, rubber gaskets, and other debris that are extracted from automobiles, truck, buses and household appliances such as washers, dryers and refrigerators. The material is shredded and coated

with an alkaline material that is designed to prevent metals from leaching out of the material. Only treated ASW can currently be disposed of in a lined landfill other than a Class I landfill. Much of the treated ASW going to landfills is used as ADC or for other beneficial reuses at the landfill. ASW used as ADC in California has increased from approximately 162,000 tons in 1998 to 632,000 tons in 2007 (see Table 3).

Staff with the Department of Toxics Substances Control have indicated that ASW treatment is not effective, the material should be considered hazardous, and ASW should be required to be disposed in Class I landfills. DTSC staff also indicate that ASW feedstocks are variable and have changed in the last 20 years (more electronic components, white goods, chlorinated plastics), sampling is costly, and it is difficult to obtain representative samples of ASW. Automobile Recycling Fluff in Ohio is considered unsuitable for ADC due to concerns regarding fire hazards, wind-driven scattering, dispersal outside the working face by landfill equipment, and the potential for contamination by asbestos, polychlorinated biphenyls (PCBs), and mercury (from switches).

The ASW generators were discussing the issues with DTSC when this paper was written. Individual shredder facilities need to enter into consent agreements with DTSC by Sept. 30, 2009, to bring auto shredder facilities into compliance with proposed operating conditions and allow them to operate under their existing conditional authorizations until the requirements for each agreement have been met within specified time frames.[33] DTSC's Scrap Metal Shredder Facility Proposed Operating Conditions indicate that treated shredder residue shall be disposed of in a class I hazardous waste landfill or in a composite-lined portion of a solid waste landfill unit that meets all requirements applicable to disposal of municipal solid waste and may be used as alternative daily cover under existing Board regulations.

Option: CIWMB continues to monitor progress between DTSC and the ASW industry.

[33] June 25, 2009 letter to auto shredder facilities from Peter Woods at DTSC.

Attachment 1
ADC Materials and Requirements in Other States

State	*Approved ADC materials, demonstrations, fees, regulations*
Connecticut	Approved ADC materials: polluted soil (i.e., contaminated soil); treated polluted soil; plastic membranes or tarps; sprayed on foams; sprayed on slurries; casting sands; incinerated sewage sludge ash; dredge spoils; etc. Department staff evaluates ADC on a case-by-case basis and requires applicant provide sufficient information (e.g., analytical test results, manufacturers information, etc.) for the intended ADC. Department staff have a working knowledge of Connecticut landfills and the subtleties associated with the operation and management of these facilities, which may mean that an ADC approved at one facility may not be appropriate for use at another facility. Factors that may affect the use of an ADC at a specific landfill include the following: personnel issues; equipment constraints; water quality problems; facility location; operational problems; etc. In situations where a new product or an unfamiliar waste is being proposed for use as an ADC, Department staff will request a field demonstration so that staff can evaluate its effectiveness as a cover material, the manufacturers/generators assertions about the product/waste, the handling capabilities by landfill personnel, and other associated problems that may occur during application procedures. Connecticut does not have specific regulations regarding ADC. 40 CFR Part 258 and scientific research are used as guidance in helping to evaluate potential materials for use as ADC.
Idaho	Chipped tires meeting size requirements, tarp-o-matic & posi-shell. The department is also considering auto shredder residue but hazardous waste staff have concerns about the industry analysis plan and whether the sample size is "representative" for the volume the facility generates. Site-specific demonstrations are not required, but the department has allowed 6-9 month demonstration projects prior to amending the facility's operations plan. ADC regulations are based on Title 40, Part 258 of the Code of Federal Regulations, Solid Waste Disposal Facility Criteria (Subtitle D) No major environmental issues reported with ADC. No diversion credit for ADC. http://www3.state.id.us/cgibin/newidst?sctid=390740013.K
Indiana	ADC material types: altered tires, wood chips, compost, foundry sand, Geotextile, plastic tarpaulin, dewatered publicly owned treatment works sludge, dewatered paper sludge. Petroleum contaminated soil, soil contaminated with vegetable oil, material containing PCB allowed under 40 CFR 761.62(d), revised as of July 1, 1999, material containing less than 50 parts per million PCB that: (A) results from a source that contained less than 50 parts per million PCB; (B) would otherwise meet the definition of PCB bulk product waste in 40 CFR 761.3, revised as of July 1, 1999*; and (C) is listed in 40 CFR 761.62(b)(1), revised as of July 1, 1999*. Other material containing less than or equal to 10 parts per million PCB not as a result of dilution Site specific demonstrations are sometimes required, particularly if Department staff is unfamiliar with the proposed material or had concerns how the material was going to perform as ADC. If a landfill wants to use other materials or waste not listed in the regulations, the landfill must submit proposal for our review and approval. No major health, safety or environmental problem caused by ADC. ADC is considered reuse. http://www.in.gov/legislative/iac/iac_title?iact=329 329 IAC 10-20-14.1
Maryland	ADC Materials: tarps, municipal incinerator ash, sewage sludge/soil mix, petroleum contaminated soil, auto shredder fluff, and Recovermat, a proprietary cover made of ground-up construction and demolition materials. A common condition is to cover with soil every week. Demonstration projects are often required, depending on well the operator documents request.

	That depends on how well they documented their request, but it is common. For example, a six-month trial was performed on auto shredder fluff and extended; operator was required to submit after-action reports describing pros and cons of the material. Research/studies on ADC: utilize Maryland regulations plus 40 CFR 258 where applicable. Incorporate both published research and site specific studies done as part of a demonstration by the requesters. This may include analytical data, such as material flammability studies on a request to use shredded C&D; wider variety of analytical studies included asbestos fiber analyses. The department also designed a test by having the operator build a bonfire and prove that they could put it out using their proposed cover material. It passed. Environmental issues: Nothing major but odor problems with some of the sludge-amended soils, and the C&D-derived cover did not suppress odors well. Improper use of the C&D material as a traction aide to slippery clay landfill access roads (not as cover) at one MLF also contributed to the development of hydrogen sulfide odors. ADC use is not included in recycling number of the state. http://www.dsd.state.md.us/comar/26/26.04.07.10.htm COMAR 26.04.07.10D
Massachusetts	ADC material types: sand blast grit, C&D fines, aggregate, short paper fiber, mixed fill, baghouse fines from asphalt batching plant, Freedman scrap wire casings, sludge ash, WTP residuals, pond sediments, contaminated soil, processed glass aggregate, coal bottom ash, spent biofilter compost, dredged sediments, C&D residual wood, processed fluorescent glass  ADCM BUDs Data 02_03_09.xls ADC demonstration projects are sometimes required. Recently gave an approval for use of flue gas desulfurization residual as a demonstration/temporary approval. Environmental Issues: C&D fines as. In some instances , the use of this material as ADC has resulted in significant odors – hydrogen sulfide generation No diversion credit for ADC
Michigan	ADC Classifications Class A: certain manufactured materials (spray-on products, such as concover or topcoat) Class B: chipped tires, wood chips, ash from combustion of coal or wood, ground shingles and other material that do not contain friable asbestos, aluminum sludge from treatment of potable water at POTWs, foundry sand, dredge spoils, paper mill sludge. At least 95 percent of material is retained on #200 sieve. Class C: Contaminated soil, from leaking underground storage tanks containing petroleum products, auto fluff, Class B materials that have less than 95 percent of material retained on a # 200 sieve, & other wastes approved by DEQ Director. Materials cannot contain hazardous constituents in concentrations exceeding criteria established by the Department of Environmental Quality Director One-year demonstration projects were allowed for Class C cover materials, but for the most part, are no longer required ADC safety regulations are based on inhalation concerns criteria No major ADC environmental issues reported. No diversion credit for ADC, as it is , it is still considered to be solid waste. http://www.deq.state.mi.us/documents/deq-wmd-swp-pt115rls.pdf http://www.michigan.gov/documents/deq/deq-whmd-opmemo-115-10_270074_7.pdf
Minnesota	No regulations on ADC. ADC materials: Soil and soil like waste materials. The majority of ADC is contaminated soils. Foundry sand and C&D fines are allowed if produced in the correct manner, which can only be used at C&D landfills and industrial landfills. The placement of new coal ash is counted as cover on older coal ash in coal ash monofills. No ADC demonstration projects are required.

	Environmental issue: Concern regarding C&D fines. There is a statute prohibiting its use in MSW landfill and drywall must be removed prior to processing and the waste cannot be ground. https://www.revisor.leg.state.mn.us/statutes/?id=115A.936 No diversion credit for ADC. The state levies a solid waste management tax on disposal, and ADC is exempt from the tax.
Missouri	ADC Materials: Tarps/geotextiles, tire chips/soil (50/50 mixture), fly ash/bottom ash mixture (up to 50 percent bottom ash), spray-applied (topcoat and similar products; posi-shell), petroleum contaminated soil, Other types of contaminated soil, woods chips/soil (50/50 mixture), virgin coal/soil (50/50 mixture), foundry sand/soil (50/50 mixture) New materials are sometimes approved as pilot projects for a specified period of time. Regional office inspectors observe material at landfill and determine whether to approve it on a continuing basis. No major environmental issues except a few odor and litter problems. ADC is not considered diversion. Tonnage fee is charged on all disposed material, including material used as ADC (tarps and spray-applied excluded)
Nebraska	ADC materials: wood chips/soil mixture, petroleum contaminated soil, slag, auto fluff, tire shreds/chips, 4 mil polyethylene plastic tarp, cob ash, 60 mil tarp, foundry sand, commercial spray-on cover Operators must perform demonstration projects that generally last 180 days to allow for evaluation of the proposed ADC under differing climatic conditions. A plan for conducting an ADC demonstration must be submitted for review and approval prior to initiating the demonstration. ADC is not counted as disposal and the state does not charge the $1.25/ton disposal fee for ADC. Landfills collect a fee for managing these materials as ADC. http://www.deq.state.ne.us/Publica.nsf/0/7f4334a7967c778086256870007d01d0/$FILE/06-222.pdf
New York	No list of approved materials. Regional offices pre-approve ADC materials. Petroleum-contaminated soils are major ADC use. Also use MSW/wood ash, aggregate/concrete/glass, processed C&D, soil (clean), POTW incinerator ash, paper mill sludge, industrial waste, Plattco sand, shredder fluff, wood/wood chips, industrial waste, foundry sand, powdered glass, sewage sludge, tire chips  alt_cover_rpt.xls Demonstration projects are not usually required. Environmental issues: Some landfill have had complications with the use of processed C&D which has contributed to the generation of noxious odors (H2S generation via decomposition of gypsum wall board). No diversion credit for ADC. http://www.dec.ny.gov/regs/14639.html http://www.dec.ny.gov/regs/4400.html
Ohio	ADC materials: Slurries, tarps, contaminated soil, foundry sand, coal combustion bottom ash, slag, and certain industrial residuals such as filter cakes. The director may approve solid waste or alternative materials for daily cover. The owner or operator must obtain written approval to use an alternative material or thickness for daily cover prior to utilizing the alternative material or thickness. Demonstration projects are required. If an operator has experience with a tarp-type ADC, the state will probably not require another trial period for another tarp. Environmental issues: No major issues beyond general inadequacies that occur from time to time. Ohio EPA considers the following materials unsuitable for ADC use: • Tires - due to significant potential as fire hazard • Fly ash - due to significant potential for dust • Automobile recycling fluff - due to concerns regarding fire hazards, wind-driven scattering, dispersal outside the

	working face by landfill equipment, and the potential for contamination by asbestos, polychlorinated biphenyls (PCBs),and mercury (from switches). • C&D fines - due to significant potential for dust and asbestos fibers No diversion credit for ADC. http://www.epa.state.oh.us/dsiwm/document/currentrule/3745-27-19_current.pdf paragraph (F) Internal operating procedure for processing ADC requests: http://www.epa.state.oh.us/dsiwm/document/guidance/gd_654.pdf
Oregon	ADC materials: Includes commercial products such as geosynthetic tarps, and indigenous waste materials such as paper sludge, auto shredder fluff, and spent refractory (alumina brick). Department of Environmental Quality approves ADC on a case-by-case basis. All requests for ADC approval require a trial period of ADC use and evaluation to demonstrate the ADC is as protective as earthen daily cover material. Approved ADC is exempt from the per-ton solid waste disposal fee as long as quantity of ADC used is equivalent to six inches of earthen material per 40 CFR Part 258.21. Quantities of ADC waste placed on or in the landfill in excess of the amount needed to provide the equivalent of six inches of daily soil cover are subject to all applicable fees.  Alternative Daily Cover Directive 06.pdf
Rhode Island	ADC materials: C&D screenings, auto shredder residue, dredge spoils, contaminated soil, incinerator ash, slag and foundry sand , Recovermat (patent process that produces ground C&D waste) and posi-shell. These types of ADC are only permitted at a lined landfill known as central landfill. Rhode Island has only two active landfills Demonstration projects required. Recovermat has undergone three-month pilot test to demonstrate its efficiency. Environmental issues: Landfill gas odor problems. Some ADC materials are more porous than soil causing fugitive emissions. Minimizing the use of soil may contribute to the problem. Air Monitoring reports show low levels of contaminants on-site and at the boundary line. Active gas system exists at this landfill. ADC is considered diversion because it supplements the use of soil and has market value.
South Carolina	ADC materials: Site-specific, case-by-case basis. No list of pre-approved materials. State has allowed automobile shredder fluff, mixtures of wood-waste and soil (50-50 mix) some types of commercial sprays such as top-coat, and tarps Demonstration projects: State grants a six-month trial period to a specific user before approving long term. Approval is based on the consideration of the cover's performance and performance of the facility using the material. Environmental issues: none reported No diversion credit for ADC. http://www.scdhec.gov/environment/lwm/regs/R61-107-19.pdf
Utah	Approved ADC materials: non-hazardous contaminated soil, tarps, plastic sheets, foam products, products created from cement kiln dust, incinerator ash, non-hazardous auto shredder residue not otherwise regulated by 40 CFR Part 761, chipped waste tires, and spray-on materials. No site-specific demonstration projects are required. No major environmental issues reported. No diversion credit for ADC. http://www.hazardou swaste.utah. gov/Rules/ Adobe/SWRules/ R315-303. eff.pdf R315-303-4(4)
Washington State	Alternative materials of an alternative thickness other than at least six inches (15 centimeters) of earthen material may be approved by the jurisdictional health department if the owner or operator demonstrates during the permit process of WAC 173-351-700 that the alternative material and thickness control disease vectors, fires, odors, blowing litter, provides adequate access for heavy vehicles, will not adversely affect gas or leachate composition and controls and scavenging without presenting a threat to human health and the environment.
Wisconsin	Commonly used ADC materials: foundry sand, auto shredder fluff, some papermill sludges, contaminated soils bottom ash and slag. ADC demonstration projects used to be required several years ago, but are not required now once the department became

	familiar with how ADC material types performed. The department bases decisions on physical ability of the proposed ADC to act like a granular soil and perform well in wet weather. Do not allow fly ash, air pollution control dusts, and filter cakes as ADC. The department has occasionally restricted ADC use to interior slopes so that any runoff stays in the waste mass or leachate collection system to prevent offsite impacts due to contaminated runoff. No major environmental issues with ADC. ADC is exempt from statutory tipping fees, currently at $5.897/ton. That leads to some abuse, as waste company sales agents sell disposal services for ADC materials without pricing in the tipping fees. Some sites have taken far more ADC materials than they can use, and department rules do not specify that an operator can only use the amount of ADC that substitutes for soil. http://www.legis.state.wi.us/rsb/code/nr/nr506.pdf
Wyoming	Approved ADC is any cover including no less than six inches of compacted soil or any alternative material approved by the administrator to adequately control infiltration, disease vectors, fires, odors, blowing litter, and scavenging For balefills, no less than six inches of compacted soil, or any alternative material approved by the administrator to adequately control disease vectors, fires, odors, blowing litter, and scavenging, applied to the top and sides of an active balefill disposal area; balefill operations shall not be required to cover the vertical working face of the balefill facility, unless required by the administrator to control litter, fire, odor, disease vectors, or scavenging. At any facility where an alternate daily routine cover material has been approved for use by the administrator, the owner or operator shall adequately compact all wastes and apply no less than six inches of compacted soil at least once every 30 calendar days, as a fire control measure. Tarps, commercially produced spray-on products, shredded scrap tires/cover soil mix are examples of approved materials. Department sometimes requires "pilot tests" before approving full use of an alternate cover. Environmental issues: Improper application by landfill operators; especially spray-on varieties. ADC does not count as diversion or recycling. http://deq.state.wy.us/shwd/SW/SWRules_z03.asp

WATER RECLAMATION
SOLID WASTE MANAGEMENT

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OF LOS ANGELES COUNTY

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STEPHEN R. MAGUIN
Chief Engineer and General Manager

August 19, 2009

Mr. Mark de Bie
Chief, Permitting and Local Enforcement Agency Support Division
California Integrated Waste Management Board
1001 I Street
P.O. Box 4025
Sacramento, CA 95814

Dear Mr. de Bie:

Comments on White Paper on Alternative Daily Cover

Thank you for the opportunity to comment on the subject white paper. This white paper is intended to satisfy the strategic directive adopted by the California Integrated Waste Management Board (CIWMB) in 2007 requiring that the current alternative daily cover (ADC) regulations be reviewed to ensure that they are grounded in the best available science, address changing market conditions, and take advantage of developing technologies. This effort, however, revisits a successful recycling program created by local government and previously supported by CIWMB. The Board should recognize the value of the greenwaste as ADC program in light of the current CIWMB draft final report titled "Life Cycle Assessment and Economic Analysis of Organic Waste Management and Greenhouse Gas Reduction Options" showing the GHG benefits of landfills as a long-term repository for organics. With greenwaste being a small fraction of the total organics in the municipal solid waste stream, CIWMB efforts should be focused on the larger organics fraction for greater diversion opportunities.

Regulations eliminating or phasing out the use of greenwaste as ADC would have significant negative impacts to Los Angeles County because there is insufficient infrastructure for alternative greenwaste management, there are significant permitting hurdles to site new facilities, it would undermine the significant investment made by local jurisdictions to provide a separate curbside collection for greenwaste, and it would jeopardize the diversion rates achieved by local government. As you are aware, the majority of jurisdictions in Los Angeles County provide a separate curbside greenwaste collection program and rely on greenwaste as ADC to meet the state-mandated diversion rate. The issues critical of greenwaste as ADC raised in this white paper are speculative and unsubstantiated. These concerns call into question Board-approved programs and Board/local enforcement agency (LEA) oversight without evidence to back up these claims.

The following are our comments on the issues raised in the white paper and on the various options to deal with these issues:

EXHIBIT B

Issue No. 1: The optimum amount, depth, and quality Board-approved ADC have not been adequately researched

This is not true. As noted in the white paper and in the Initial Statement of Reasons for the current ADC regulations, **111 site-specific demonstration projects** were used as a basis for establishing the minimum standards to protect public health, safety, and the environment. These demonstration projects, which were approved by the LEA and CIWMB staff, included testing geosynthetic blankets (55 projects), greenwaste (27 projects), and other ADC materials (foam products, sludge, ash, and autoshredder waste).

Issue No. 2: The specifications for some ADC materials make it difficult to evaluate compliance through periodic inspections. The current regulatory regime could allow the misuse of ADC to go undetected.

The presumption that there is misuse of ADC ignores the role of the LEA and the extensive disposal and beneficial reuse (of greenwaste as ADC) reporting requirements imposed by the agencies with jurisdiction over landfills, including CIWMB and the LEA. In establishing a refuse-to-ADC ratio, as presented in Option 1, it would ignore the site-specific demonstration previously conducted and approved for that landfill and impose an arbitrary operational restriction that would be difficult to implement and enforce across the entire surface area of the working face. Consequently, we are strongly opposed to Option 1.

Option 2 would leave the thickness requirements at the current levels but improve monitoring. Option 3 would improve the information on ADC use in the operator's Report of Disposal Site Information. Both of these options are acceptable and are able to be implemented in practice.

Issue No. 3: ADC often contains materials that are not allowed to be included in the material types (contaminants). For example, many feedstocks for construction and demolition (C&D) ADC include materials that are not listed as allowable, such as wallboard.

We believe that Issue No. 3 overstates the contamination problems. Commingled green and food waste is not ADC and should be enforced by the LEA.

We support Option 3, where CIWMB sponsors a study of additional ADC material types, and Option 4 which would require a demonstration project for C&D with gypsum wallboard as ADC. We do not support the other options in the white paper due to their impracticality and possible implications to other ADC materials that are already well regulated. Additionally, a rigorous scientific study regarding hydrogen sulfide emissions from wallboard is needed before it is included in this white paper as a fact, particularly if naturally occurring gypsum in cover soil may also generate hydrogen sulfide and both emissions may not be distinguishable.

Issue No. 4: Many stakeholders believe that CIWMB's site demonstration project requirements for new ADC materials, such as MRF and C&D fines, lack specific requirements on how to conduct the demonstration. Fines are produced from various feedstocks and processes, and the constituents can vary greatly.

We believe that the site-specific demonstrations provide sufficient data for approving new material types for use as ADC. The regulations currently contain the flexibility to test all ADC materials and different handling methods. Consequently, no further regulations are necessary.

Issue No. 5: The definition of green material in the compostable materials handling regulations is different than the ADC definition of processed green material.

Given that there are no major problems reported to LEAs or CIWMB related to the differences between green material and processed green material, we only support Option 1 which leaves alone the current definitions.

Issue No. 6: CIWMB Strategic Directive 6.1 aims to reduce the amount of organics in the waste stream by 50% by 2020. Organic-derived ADC is considered beneficial reuse, not disposal, which is a disincentive to keep green material out of the waste stream.

The point raised about the negative impacts of organic-based ADC on composting is contradicted on page 10 of the ADC white paper which shows that while the use of greenwaste as ADC increased in 1995-96 the amount of compost products doubled in that same period. This data does not substantiate the claim that organic-based ADC negatively impacts composting. Additional data is needed to support this contention.

We support Option 1 only, which would have the ADC Policy Working Group monitor the results of CIWMB's report "Life Cycle Assessment and Economic Analysis of Organic Waste Management and Greenhouse Gas Reduction Options" to determine the proper regulatory approach based on the report's findings. This report, which was recently released for review, finds that landfills are a cost effective and environmentally beneficial option for managing organics, particularly when considering the long-term sequestration of carbon, the high collection efficiencies of landfill gas, and the displacement of fossil fuel from energy recovery.

The report studies four diversion scenarios - each with a different goal – and then presents the mix of diversion alternatives needed to achieve that goal. In all cases or scenarios studied, vast amounts of new infrastructure will be required, particularly waste-to-energy (WTE) and composting facilities. Without sufficient development of the additional infrastructure, landfills will continue to be the backstop that must be relied upon to close the gap for the management of the remaining organics. Therefore, it is critical that any new policy recognize the critical role that landfills will play during the transition to other organic management alternatives. The Sanitation Districts believe in a diverse organics management infrastructure and have invested significant capital to construct it, but we have found that it is a long-term endeavor that often encounters significant resistance from environmental and community groups when siting and permitting. Consequently, these issues need to be resolved before new infrastructure can be built and organics management alternatives can be realized.

Issue No. 7: Using organic materials to reduce greenhouse gas emissions at landfills is currently being researched.

Please refer to our comments on Issue No. 6.

Issue No. 8: Department of Toxic Substances Control is in the process of reexamining Auto Shredder Waste (ASW), and its Reclassification as a hazardous waste would require ASW to be treated so that is not hazardous or to be disposed in a Class I landfill.

The Sanitation Districts of Los Angeles County do not use ASW as ADC and, therefore, have no comment.

We appreciate the opportunity to comment on this white paper. Please contact me at (562) 908-4288, extension 2723, should you have any questions.

Very truly yours,

Stephen R. Maguin

Glenn Acosta
Senior Engineer
Facilities Planning Department

GA:ddg

cc: Mark Leary, Executive Director, CIWMB
Howard Levenson, Program Director, CIWMB

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Research and Development

EPA/600/SR-93/172 September 1993

EPA

Project Summary

The Use of Alternative Materials for Daily Cover at Municipal Solid Waste Landfills

Frederick G. Pohland and Johannes T. Graven

This investigation was conducted to assess the applicability of currently available (ca. 1992) alternative materials for use as daily cover at landfills. Information on characteristics, material and equipment requirements, methods of preparation and application, climatic and operational considerations, effectiveness, and costs were evaluated with respect to present status and potential for use.

Results indicated that alternative daily cover materials (ADCMs) can augment management practices at municipal solid waste landfills while enhancing environmental control. Although applicability of ADCMs varied depending on site specificity and the particular material used, most were easily applied, satisfied operational and regulatory requirements, saved landfill capacity, decreased soil requirements, and facilitated leachate and gas management and control. Although most materials met established criteria for daily cover, differences exist that warrant development of consensus performance standards for use and application. Further development and integration into overall landfill management practices are also justified.

This Project Summary was developed by EPA's Risk Reduction Engineering Laboratory, Cincinnati, OH, to announce key findings of the research project that is fully documented in a separate report of the same title (see Project Report ordering information at back).

Introduction

The diminishing availability of landfill sites and associated solid waste management challenges are major issues nationwide. In addition, landfilling costs are increasing as more stringent regulatory requirements make design and operation more complex and attentive to health and environmental safeguards. This has prompted recent changes in landfill management and operational practices to conserve space, improve efficiency, and enhance public acceptance. One such change is the emphasis being given to options for meeting daily cover requirements. These options include using alternative daily cover materials (ADCMs) that help conserve landfill space and reduce cover soil requirements without diminishing health, environmental aesthetics, and other site management and use standards.

Daily cover functions to control disease vectors, blowing litter, odors, scavenging, and fires. It should also be effective under various operating conditions, permit controlled management of leachates and gases, and improve aesthetics. Because of its usual availability and traditional use at landfills, soil remains the most commonly employed material for daily cover. However, soil tends to consume landfill capacity, is not always readily and economically available or suitable under various operational conditions, and requires allocation of equipment and personnel. Therefore, consideration of commercially available products and various indigenous

EXHIBIT C

materials as alternatives for daily cover is warranted.

This investigation addresses the feasibility, benefits, and limitations of currently available ADCMs from operational, performance, environmental, and economic perspectives and identifies issues deserving further consideration and development.

Methods and Procedures

Consistent with project objectives, various types of ADCMs were identified and characterized with respect to use and performance by evaluating the technical literature, interviewing landfill owners/operators, and visiting landfills where ADCMs were being applied. Supplemented by a questionnaire sent to state regulatory agencies, U.S. Environmental Protection Agency's (EPA) regional offices, known manufacturers and suppliers of ADCMs, solid waste management associations, and owners/operators with ADCM experience, we identified 16 commercially available and 8 indigenous ADCMs.

Results and Discussion

Types of ADCMs

Commercially Available Products

There has been a significant recent growth in developing, marketing, and using commercially available ADCMs at solid waste landfills. Based on composition, method of application, and general performance, the 16 identified ADCMs were: four foam, three spray-on, and nine geosynthetic products; their general characteristics and costs are presented in Tables 1 through 3. Although it is recognized that individual products will vary with respect to performance under varying operational conditions (Table 4), key features of each of the principal groups are described below.

Foams

Foam ADCMs are usually applied to the landfill working face in 2- to 6-in.- (5- to 15-cm) thick layers by using self-propelled or towed foam generation and application equipment specifically designed for a particular foam. Both hardening and nonhardening foams are available, and they retain their structural integrity from 15 hr to 7 days depending on the specific product and the effect of climatic conditions (particularly rainfall). Effectiveness as a daily cover depends on the thickness of application and sufficiency of coverage, which may be stipulated by permit requirements. Foam ADCMs are effectively destroyed placing additional wastes on them on the next operating day.

Spray-ons

Slurry or emulsion spray-on ADCMs are applied to the working face using towed or skid-mounted application equipment, similar to hydroseeders but specifically designed for use with a particular product. These products are applied in a 1/16- to 1/2-in.- (0.16 to 1.27-cm) thick layer and allowed to dry to a crust or shell. Spray-ons can retain their matted structure from 1 wk to 3 mo depending on product and thickness and continuity of coverage. Working face preparation and operator proficiency during application are important factors in determining the effectiveness of cover. Spray-on ADCMs are also mechanically destroyed by placing additional wastes on them on the next operating day.

Geosynthetics

Geosynthetic ADCMs consist of various types of geosynthetic materials that have either been developed or adapted for use as daily landfill cover. Panels fabricated from these materials are placed over the working face at the end of the day and retrieved before the start of the next operating day. Panel placement and retrieval is done manually or with available landfill equipment. At some landfills, specially designed and fabricated ancillary equipment such as tow bars, lifting bars, reels, or rollers is used to facilitate panel placement and retrieval. Most panels are reused until they no longer provide an effective cover because of their physical deterioration resulting from tears and punctures during placement and retrieval from climatic stresses from wind, rain, and freezing temperatures. Effective life of panels is 1 to 3 mo, although some panels have been used for 12 to 18 mo.

Indigenous Materials

Indigenous ADCMs may consist of various types of locally available waste products, including ash-based materials, shredded automobile components and tires, sludges and sludge-derived products, dredged materials, foundry sand, petroleum-contaminated soils, and shredded green wastes. Many of these same materials are routinely disposed of at landfills. Demonstrating their acceptability may require physical modification, chemical conditioning, or special analysis, since each can vary significantly with respect to physical and chemical characteristics and effectiveness under various operational and climatic conditions. Moreover, although indigenous materials are usually applied with available landfill equipment at the same (or greater) thickness as soil cover, additional equipment/facilities may be required for processing and on-site storage. Indigenous materials are generally able to meet established criteria for daily landfill cover; however, some materials such as dredged material, sludges, and sludge-derived products can intensify odors when first applied, and other materials such as green wastes and shredded tires are combustible.

Site Operation and Management Implications for ADCMs

The merit of using of ADCMs at landfills is often determined by operational, performance, and economic comparisons with soil. These comparisons may include inspection of the effect on landfill capacity, soil requirements, application and performance considerations, climatic conditions, leachate and gas management, operational costs, and other site-specific requirements.

Effect on Landfill Capacity

Landfill owners/operators identify the potential savings in landfill capacity as the most important reason for using ADCMs, primarily because of extended landfill life and additional revenues from the space otherwise occupied by soil. Such savings are generally independent of the type of alternative cover material used but directly depend on how often the ADCM is actually used in lieu of soil. The latter is largely determined by climatic conditions, but availability of materials or constituents, the condition and/or age of the material, and the efficiency and reliability of the application equipment or methods are also important.

Effect on Soil Requirements

Use of ADCMs decreases the need and relative costs for soil as daily cover, so that on-site soils are conserved or offsite acquisition is reduced. Equipment and personnel costs for moving and placing soil cover also decreases, as does vehicular traffic, road maintenance (both offsite and onsite), and noise and dust generation.

Application and Performance Considerations

Ease of application with less equipment, personnel, and time than that required for soil cover is an important operational and economic consideration. This can be particularly significant for sites where adverse weather conditions such as rain or freezing temperatures can curtail use of soil cover to a greater degree than would occur with certain ADCMs. Moreover, since

less time may be needed to apply ADCMs, larger quantities of wastes can be received at the landfill for longer periods of time than would otherwise be possible, thereby extending service and increasing associated revenues.

Although most ADCMs are able to meet established criteria for daily cover from both operational and regulatory perspectives, distinctions exist among the various ADCMs with regard to their effectiveness for odor and fire control and for minimizing moisture infiltration under various climatic and operational conditions. In addition, site-specific circumstances will often dictate the approach to satisfy cover criteria. With few exceptions, performance-based standards for evaluating the effectiveness of ADCMs have not been established, and subjective judgement comparing the ADCM to a standard 6 in. (15 cm) of compacted soil is often used.

Effect of Climatic Conditions

Various conditions of rainfall, temperature, and wind affect ADCM use—the ease and frequency of application and retrieval and the effectiveness. Moderate to heavy rains can wash out nonhardening foams, and hardening foams and spray-ons cannot be applied under such conditions. Rain can also increase the weight of nonwoven geosynthetics and make them more difficult to handle. Under windy conditions, panel placement may not only require additional time and personnel but may also be unsafe or impractical. Geosynthetic panels can also freeze to the working face or be covered with snow, both of which increase the risk of loss or damage on retrieval.

Leachate and Gas Management

The use of ADCMs can enhance controlled leachate and gas management by limiting the development of intervening cover layers. Eliminating such layers facilitates unimpeded movement and collection of leachates and gases within and between the landfill cells and when leachate recycle for accelerated stabilization is practiced. Therefore, commercially available products may be preferred over some of the indigenous materials.

Although foam and spray-on covers are mechanically destroyed when additional wastes are placed over them on subsequent operating days, these and some indigenous materials remain within the landfill and may affect leachate composition and its subsequent disposition or otherwise affect the progress of landfill stabilization. Because stabilization processes within a landfill normally occur over extended periods, and many ADCMs have been available and used for only a relatively short time, potential long-term effects of constituents leached from alternative cover materials, although generally considered to be minimal, may need to be established.

Operational Costs and Site Requirements

Operational costs and other site-specific requirements may also affect the feasibility of using a particular ADCM. Although the determination of potential cost savings associated with ADCMs is usually made by comparing them with soil as a daily cover, additional factors such as availability of storage facilities for some ADCM constituents and application equipment, utility requirements, landfill working-face preparation needs, and operator skills and safety implications must also be evaluated.

Conclusions

Based on the results of these investigations, the following conclusions can be drawn:

- Use of alternative materials for daily cover in lieu of soil can result in operational, performance, environmental, and economic benefits at municipal solid waste landfills. These benefits include ease of application, improved effectiveness in meeting site operational and regulatory requirements, savings in landfill capacity, decreased requirements for soil, and more effective management of leachates and gases.
- Most alternative daily cover materials are able to meet established criteria for daily cover under various operational and climatic conditions. Certain materials are more effective than soil as a daily cover, especially with respect to control of vector access, blowing litter, and odor generation and to the minimization of moisture infiltration.
- The effectiveness of ADCMs depends on properly preparing the landfill working face preparation and on equipment-operator proficiency. Climatic conditions and other site-specific considerations will also influence the choice of ADCM, its method of application, and effectiveness as daily cover.
- Evaluation of the effectiveness of ADCMs in meeting operational and regulatory criteria for daily cover is generally based on subjective comparisons with soil cover. Lack of consensus, performance-based standards for various operational and climatic conditions limit the selection and regulation of ADCMs for landfill applications.

Recommendations

Recommendations regarding the future development and use of ADCMs include:

- Integration of ADCMs as alternative cover options into the design, construction, and operation of landfills for solid waste management;
- establishment of performance-based standards to permit more objective evaluations of the short- and long-term effectiveness and suitability of ADCMs; and
- coordination between manufacturers of ADCMs and the regulatory and user communities to ensure appropriate use of ADCMs and to establish training and certification programs.

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conformance with the dust abatement program developed in conformance with SCAQMD Rule 403.

Only soil will be used as daily cover on any operating day before a period when the landfill will be closed for more than 24 hours. This will generally occur on Saturdays and the day before a scheduled holiday. A soil sealant will be applied to areas that have not previously received soil sealant at the same time.

B.5.2.1 ALTERNATIVE DAILY COVERS (27 CCR, SECTION 21600(b)(6)(B))

Alternative daily covers (ADC) will be used to conserve air space and native soils. In addition, the use of ADC will provide the operator an alternate method of covering the working face during inclement weather. SCL will utilize geosynthetic panels, processed green material, and/or soil in any combination on any particular day as permitted by the current SWFPs for the City and County SCL (see Appendix D). Other ADC materials specifically approved in 27 CCR may also be utilized as authorized by the appropriate regulatory agencies. ADC materials not specifically approved in 27 CCR will be subject to site specific demonstration projects that are approved by the LEA to establish suitability as daily covers. Prior to the use of other ADC materials, the facility will comply with 27 CCR, Section 20690(b) requirements.

SCL will use geosynthetic fabric or panel products (tarps) and processed green material as ADC material. The tarps are manufactured by several companies and are available in several sizes with 75 feet by 100 feet panel the most predominant size in use. Other sizes will be used depending upon the area to be covered and their ease in deployment. The tarps are made of polyethylene or polypropylene and typically about 70 mils in thickness. The tarps are ultraviolet stabilized, chemical resistant, nylon reinforced, and maintain a low permeability to provide maximum run-off. The tarps will be secured by sandbags, tires or soil and deployed either manually or with the use of heavy equipment.

Tarps will be removed from the working face at the beginning of the business day and inspected for rips or tears and repaired as necessary. Generally, rips or tears twelve inches or larger will be repaired prior to re-deployment. Tarps will

EXHIBIT D

not be used if the landfill will be closed the following day. Native soils will be used exclusively as daily cover material on those days.

Processed green material used as ADC will be spread over the compacted refuse surface at the conclusion of the workday. The area of refuse receiving processed green material ADC will be completely covered in a compacted layer with a minimum of 6 inches and no more than an average of 12 inches. Processed green material ADC utilized on the prior day will either be covered by additional refuse or receive soil daily cover by the conclusion of work on the following day. Processed green material ADC will not be used if the landfill will be closed the following day. Native soils will be used exclusively as daily cover material on those days.

Processed green material utilized for ADC will originate from either off site processor(s) or from an on site processing operation that may be established in the future. Regardless of the source, the processed green material ADC will be clean and free of refuse contamination and be processed (ground, shredded, screened, or by other means) to provide a compacted material free of open voids in the ADC cover.

Geosynthetic tarps and processed green materials have been shown to fulfill the regulatory prescriptive standards for daily cover. The geosynthetic tarps and processed green material ADC have been determined by the CIWMB to provide equivalent protections as soil cover while reducing the need for on-site soil usage. Vectors usually associated with landfill operations included flies and rodents. Previous studies, including the ADC geosynthetic tarps site specific demonstration project, indicate that rodents are not common to the facility and should not be considered a problem. ADCs will help minimize dust generated on site by reducing the number of truck trips per day for daily soil cover. Watering of the approaches to the working face and roadways will continue.

The use of soil during the rainy season is cumbersome and at times, difficult to apply. Using ADC tarps, and/or processed green material will minimize this problem and improve operations near the working face by providing for a safer working environment. Additionally, the use of ADC in conjunction with other winterization activities will minimize the amount of soil "tracked" onto the main haul road.

Assessment of the ADC's performance will occur throughout its use on the landfill. Extensive use of geosynthetic tarps and processed green material as ADC throughout the State of California have demonstrated that use of such does not impact water quality.

The following Table 5 summarizes the properties of the ADC material with the corresponding properties of soil that have been used at the site for daily cover:

TABLE 5
SUNSHINE CANYON LANDFILL
COMPARISON OF GEOSYNTHETIC TARPS AND PROCESSED GREEN MATERIAL TO DAILY SOIL COVER

Property	Daily Soil Cover	Synthetic Tarps	Processed Green Material
Hazardous or pathogenic nature of the cover	None	None	None
Resistance to heat and fire after application and compaction	On site soils do not burn or propagate flame and will have a tendency to smother fires	The tarps used will have a flame retardant coating applied	Naturally occurring moisture in the green material and the 1-day limitation in use will max. Resistance to heat and fire.
Field permeability after application and compaction	Soil analysis indicate a permeability of 1.0 x 10^{-5} at 90% compaction	Most tarps are water repellent; runoff will be controlled and managed accordingly	Like soil, processed green material will absorb water until the surface is saturated to cause lateral run-off.
Compaction capability of the cover	Soils are conducive to compaction	Tarps will not be subject to compaction	Processed green material is conducive to compaction as noted in the applicable regulations.
The ability of the cover to control the emergence, attraction, or harborage of vectors	Vectors can emerge from the waste; however, compacting the cover significantly reduces emergence and breeding	Control similar to soil; waste types and operation dictate severity of emergence and attraction	Similar performance as soil.

The use of flame retardant tarps and the moisture retained in processed green material reduces the potential for a fire occurring or spreading. If a fire were to occur, the following procedures would be followed:

- Isolate the burning materials from the other wastes;
- Smother the burning waste with soil;
- Allow the waste pile to cool for 24 hours; inspect for smoldering;
- Incorporate into the working face if safe; and
- Report all incidents.

Current and prior experiences with fires at the site have not indicated a problem. Soil will be used as daily cover on Saturdays or more frequently as required to maintain a safe and neat working environment. On those days when soil will be used as cover, operations staff will compact the soil.

In general, the waste types covered with the geosynthetic tarps and/or processed green material will be municipal solid wastes, commercial and industrial waste. If a tarp needs to be replaced or is out of service for repair, soil or green waste will be used until repaired or replaced.

Processed Green Material Calculation

As noted previously, the working face area will be approximately 120,000 square feet. An area of this size, if completely covered with an average depth of 12 inches of processed (95 percent less than 6 inches) green material ADC would consume approximately 1,550 tons per day of processed green material ADC. This quantity is calculated as follows:

Active Face Area to be Covered	=	120,000 sq. ft.
Depth of ADC Material	=	12 in. (1 ft.)
Compacted ADC Material Density	=	700 lbs./cu. yd. (typical)

Quantity of ADC Material = (120,000 sq.ft.) x (1 ft. depth) x 700 lbs./cu.yd.)
(27 cu.ft./cu.yd.) x (2000 lbs./ton)

=1,555 tons (round up approx. 1,550 tons)

It is unlikely that the operations will have access to this quantity of processed green material on a regular basis, therefore, the operation will also make use of geosynthetic tarp ADC and/or soil in. Furthermore, SCL is limited by its local land use entitlements to an average tonnage of 6,600 tons per week (1,100 tpd average on a 6-day week) of exempt waste, such as green waste used for ADC.

During periods of inclement weather (e.g. high winds), when use of ADC tarps is not practical, its use may be suspended and soil or green waste used as daily cover.

Odor will be evaluated (qualitatively) if the site receives complaints that can be attributed to the use of the ADC tarps or processed green material. Fires will be reported to the LEA within 24 hours of occurrence. SCL will continue its routine litter collection and abatement program. The working face will be generally maintained at the dimensions set forth above but may be larger or smaller as waste inflow rates increase or decrease respectively.

B.5.2.2 BENEFICIAL REUSE WASTE TYPES

Processed asphalt and concrete rubble will be used in road base and for construction of wet weather operation pads and access roads. This beneficial reuse application will be used to conserve native resources and to reduce the importation of like construction material on-site, thus reducing truck traffic. Other processed asphalt and concrete rubble material not specifically approved in the regulations will be subject to site specific demonstration projects that are approved by the LEA to establish suitability as beneficial reuse.

Processed asphalt and concrete rubble will be used for roads and wet weather operations pads. Material will be spread throughout the pre-designated area at an average depth of approximately 24 inches to provide stable, leveled, and compacted working surface for vehicles to utilize. Material will be spread and handled utilizing heavy equipment and manually as necessary. These working surfaces will be especially necessary during wet conditions to avoid trucks from getting stuck in muddy conditions. The following analysis can be used as a guideline but actual amounts will be dependant on specific weather conditions during the wet season.

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17. LEA Conditions: (continued)

S. The operator shall install landfill gas monitoring probes for the detection of landfill gas migration at a frequency of one probe per 1,000 feet around the area of the landfill expansion and one probe per 650 feet in the area of Unit 1. If monitoring results and evaluation of the gas control system indicate that gas is not being properly controlled in accordance with the requirements of 27 CCR 20919 and 27 CCR 20919.5, the operator shall implement a remediation plan describing the nature and extent of the problem and the proposed remedy which may include the expansion and/or modification of the landfill gas control system if the Local Enforcement Agency determines that such expansion or modification is necessary.

T. The operator shall install and maintain signs in English and Spanish at the entrance notifying drivers and haulers of the facility's tarping program and prohibited waste. Any additional signs required to ensure orderly and safe operation of the facility shall be provided in a timely manner.

U. The operator shall comply with the established Litter Control Program as specified in the [Q] Conditions and Mitigation Reporting and Monitoring Program and as outlined in the Joint Technical Document.

V. The operator must comply with dust control measures as specified in the [Q] Conditions and Mitigation Reporting and Monitoring Program and as outlined in the Joint Technical Document. The operator must provide additional dust control measures upon the request of the LEA, if such measures, as provided in the Joint Technical Document are found to be inadequate to minimize the creation of a dust nuisance.

W. Noise levels at the property boundaries shall be in conformance with the City Municipal Codes. Approved hearing protection shall be provided for employees and visitors, if necessary.

X. Any proposed salvaging or recycling operations shall be conducted within designated areas in a neat and orderly manner so as not to generate litter, harbor vectors or pose a nuisance.

Y. Solid waste shall be compacted within 1 hour of its arrival at the working face.

Z. LEA approved alternative daily covers (ADC) as a daily cover for the working face area of the landfill are permitted, with the exception of treated auto shredder waste, sewage sludge and contaminated sediment, as outlined in Section 5.10.1.2 and Appendix F-3 of the Joint Technical Document, under the following conditions:

- The facility must comply with the state minimum standards set forth in Sections 20680, 20690 and 20695 of Title 27 of the CCR.
- Operations must be consistent with the terms and conditions set forth in the Joint Technical Document.
- Operations must conform to all LEA requirements pertaining to use of ADC.

Alternative daily cover (ADC) as a daily cover for the working face area of the landfill is permitted if it meets the following performance standards as defined in CCR, Title 27, Section 20680, 20690, and 20695.

- The ADC material effectively prevents the propagation or attraction of flies, rodents or other vectors.
- The ADC material shall control landfill fires.
- The ADC material shall prevent the creation of odors and other nuisances.
- The ADC material shall prevent the migration of litter off site or onto other areas of the landfill.

If these standards are not met, then at least six inches of compacted daily soil cover shall be applied to the working face.

AA. Intermediate cover will consist of a minimum 12-inch thick layer of compacted soil. Alternative intermediate cover may only be used after receiving approval from the LEA and the CIWMB and demonstrating that it will not impact the public health and safety or the environment.