City of San Diego Long-Term Resource Management Options (LRMO)
Strategic Plan
Resource Management Advisory Committee
Environmental Services Department Auditorium, 9601 Ridgehaven Court, San Diego, CA 92123
Wednesday, Apr. 30, 2008, 2:30 – 5:00 p.m.

Meeting Summary

RMAC Members Present:
Kristen Byrne, San Diego County Disposal Association
Sylvia Castillo, PE, City of San Diego Environmental Services Department
Andrea Eaton, City of San Diego Council District 7
Bob Epler, City of San Diego Environmental Services Department
Richard Flammer, Integrated Waste Management Citizens Advisory Committee
Lynn France, Integrated Waste Management Technical Advisory Committee
Shirley Larson, League of Women Voters San Diego
Alan Pentico, San Diego County Apartment Association
Bill Prinz, Solid Waste Local Enforcement Agency

Project Team Members:
Bryan Stirrat, PE, Bryan A. Stirrat and Associates
Bob Hilton, HF&H Consultants
Christine Arbogast, PE, Bryan A. Stirrat and Associates
Sonia Nasser, PE, Bryan A. Stirrat and Associates
Chip Clements, PE, Clements Environmental
Lewis Michaelson, Katz & Associates
Kelly Thomas, Katz & Associates

Interested Attendees:
Christina Buchanan, Solid Waste Local Enforcement Agency
Robert Cattolica, UCSD Mechanical Aerospace Engineering Department
Bud Chase, Allied Waste
Richard Chase, GCC
Stephen Grealy, City of San Diego Environmental Services Department
Rex Motes, UCSD Rady School of Management
Robert Peguk, UCSD Rady School of Management
Bob Wallace, WIH Resource Group
Lisa Wood, City of San Diego Environmental Services Department

Welcome/Introductions/Approval of Feb. 20, 2008 Meeting Summary

The committee approved the meeting summary from Feb. 20, 2008.

Recap of Solid Waste Facilities Tour

The tour on March 26 covered the Allan Company Material Recovery Facility, the Miramar Nursery, Miramar Greenery and the Miramar Landfill. The committee members who attended the tour provided feedback on what they saw during the tour. One member said she was impressed by how proud the employees were of their work. Tour attendees were also impressed by the City's programs to keep birds away from the landfill.

Environmental Services Department Updates

Mr. Stephen Grealy gave an update on current department initiatives. First, the department will present a proposal to the City Council in July to modify the department's Park and Recreation recycling program, which has been in effect since 1992 to provide recycling drop off for people who are not served by the curbside recycling program. Currently, the department collects recyclables from bins in City parks and uses money from the recycled products to sponsor park and recreation programs. The department will propose hiring a private firm to pick up the recyclables from the large bins in the parking lots and installing many smaller recycling receptacles in public spaces. The department's proposed project will provide a better nexus between park and recreation activities and recycling, decrease the frequency with which the containers must be emptied and deter scavenging of recyclable material. The department plans to initiate pilot programs late this summer at Mission Trails Regional Park.

Another pilot program will begin this fall to test the effectiveness of public disposal bins that include a separate bin on top for recyclables, as is already done in Solana Beach.

Finally, the department is conducting a study of possible markets for certain kinds of organic and yard waste products as part of its plan to expand the Miramar Greenery.

Review Screening Criteria Matrix for Resource Management Options

Mr. Lewis Michaelson explained that the purpose of today's meeting is to review a list of 91 options that the consultant team evaluated based on the criteria the committee developed. Each option was ranked 1 (low), 3 (medium) or 5 (high); for each screening criterion. As a reminder, the final product of this process will be a long-term strategic plan with a planning horizon of 2030. The best strategies in the plan will maximize the remaining capacity at Miramar Landfill and manage waste produced in the City of San Diego once the landfill closes.

The options were split into six categories. The option categories were Zero Waste Programs, Zero Waste Infrastructure, Conversion Technologies, Waste to Energy, Landfill Optimization and Alternative Disposal Options. The lead team member for each set of options provided the committee a brief overview of how options were evaluated and ranked. Lewis then solicited committee input on whether the options were ranked logically and fairly. During Phase 2 of this process, the consultant team will further analyze a subset of options. The team and Environmental Services Department staff cautioned that, while some options may be ranked low relative to other options, political, economic or social circumstances may change, resulting in a possible increase in the feasibility of these lower-ranked options in the future. The report for Phase 1 will include the rationale behind all rankings, including explanations of why options were eliminated.

RMAC members asked questions and made comments on each category.

Alternative Landfill Disposal Options – Christine Arbogast

The options in this category included a review of 25 potential landfills where refuse could potentially be taken; 17 landfills in San Diego County and eight in adjacent counties (Orange, Riverside and Imperial). Several of the in-county landfills were eliminated because they are operated by the military and do not accept non-military waste; others were too remote or too

small (daily tonnage capacity or limited site capacity) to provide the needed disposal capacity for the City.

Some of the out-of-county sites were eliminated because they cannot accept out-of-county waste or have limited disposal daily or site capacities. The remaining options were ranked based on disposal fees, transportation fees, transfer station fees, immediate availability of landfill capacity, regional accessibility, traffic and air quality impacts, available daily tonnage, overall sustainability and ability to optimize Miramar Landfill capacity, either by actually increasing capacity at Miramar or by disposing waste at a different landfill.

Of the in-county options, the Miramar Landfill height increase rated best overall because it is located at the current landfill site and would provide four to five years of additional capacity. Sycamore Landfill (without the proposed capacity expansion) ranked similarly because it is located in San Diego and the City already has an agreement in place with Allied Waste to take the City's residential waste.

Out-of-county options ranked lower overall because of higher transportation costs and lower available tonnage. The rail haul option to the Mesquite Landfill ranked similarly to some out-of-county options because of the transportation distance and the lack of rail infrastructure connectivity to the City of San Diego. .

Q: What fuel price was used in this analysis?
A: Analysis on that level of detail will be conducted in Phase 2.

Q: Do landfills in Mexico provide any options?
A: Mexican landfills are not options because it is illegal to export waste over international borders.

Landfill Optimization Techniques – Sonia Nasser
The options in this category maximize the remaining space at the existing Miramar Landfill and include soil compaction, alternative daily cover, landfill reclamation, leachate recirculation, bioreactor techniques and steam injection.

The City is currently implementing compaction and alternative daily cover techniques. Among options the City is not currently implementing, landfill reclamation of North Miramar Landfill ranked relatively high.

Q: How does Miramar Landfill's compaction rates compare with private landfills?
A: Compaction rates are comparable because the City follows the same industry standards and uses the same equipment as private landfill operators.

Q: Is anything being done elsewhere that the City is not already doing?
A: Bioreactor techniques would make a big difference because the landfill waste would decompose as it sits in the landfill and produce gas that can be used to produce energy. However, because refuse requires a long time to decompose, it would be about 10 years before a noticeable site capacity gain could be seen from implementing a bioreactor. The City investigated the possibility of retrofitting the active section of West Miramar as a bioreactor site.

Bioreactors require a double liner at the bottom of the landfill and an interrupted path for moisture to seep through soil layers. West Miramar is not a feasible site because it only has a single liner and would require significant permitting and design challenges for an existing landfill site. The bioreactor option is a good example of an option that is not very feasible on its own but could be feasible if the inactive North Miramar is reclaimed.

Q: Last meeting you said the pilot study for steam injection showed this technique would not work because the waste is too dry and the City does not have enough leachate to apply to the landfill. Would you be able to do use reclaimed water instead of leachate?
A: Use of reclaimed water needs to be approved by the San Diego Regional Water Quality Control Board, and not enough reclaimed water is available to supply a steam injection project. Steam injection would also require significant new infrastructure. Currently Miramar's compaction is doing well. The goal of steam injection is to further compact the waste. It is reported that the compaction rates at West Miramar have improved over time. The City leases all of its landfill operation equipment and can upgrade to the most up-to-date equipment on a regular basis..

Comment: Alternative Daily Cover-Computer Aided Earth Moving System (Option #4) should be ranked higher for financial viability because the heavy equipment is leased, lowering the City's capital and maintenance expenditures. We can assume that the computer-aided units would be leased as well, which would be covered as an operating cost, not a capital investment. Why is regional viability low?
A: Regional viability is lower because of the incremental gain in compaction that the computer-aided system would provide. However, we will take another look at this option based on the assumption that the City leases all of its heavy equipment. We will also look at compaction results at landfills that use this technique to determine what would be possible at Miramar.

Waste to Energy – Chip Clements
Only one option is included in this category: a traditional waste to energy facility that could process 500 tons per day. While this option is technically viable, it ranked relatively low overall because the lack of social acceptance for this option would make it difficult to permit. This is another example of an option that could become more feasible if social attitudes change. One hypothetical option could be to site a plant at Miramar Landfill, located on federal land, to supply energy to Marine Corps Air Station Miramar.

Ms. Lisa Wood mentioned that as reduction of greenhouse gases gains attention from elected officials, such as California's governor, waste to energy plants may become more acceptable. She said the EPA has ranked waste to energy plants as preferable to landfills in terms of reducing greenhouse gas emissions.

Comment: If the full life cycles of products are taken into account, waste to energy plants would not rank as highly.

Conversion Technologies – Chip Clements
This category includes gasification and pyrolysis, anaerobic digestion, hydrolysis (creating ethanol from products in the waste stream), mechanical processing, chemical processing and

composting. Gasification/pyrolysis and anaerobic digestion scored the highest in this category because they are the most proven technologies. Gasification/pyrolysis provides the greatest diversion rates, produces energy and is moderately expensive. Anaerobic digestion ranked slightly lower on regional viability because the final material must be composted. This ranking could increase depending on future markets for compost waste. The remaining options ranked lower because the technologies are not proven.

Comment: Anaerobic digestion should be ranked higher on regional viability. It produces fewer emissions.

A: It probably should be rated similarly to gasification. The difference is that digestion produces material that needs to be disposed, and there is sometimes an issue with controlling odors, but both techniques have side effects. If a market opens for the residual material, digestion would become a preferred option. Both gasification and digestion will go forward to Phase 2.

Zero Waste Infrastructure – Chip Clements
This category includes household hazardous waste collection centers, material recovery facilities, green waste facilities, construction and demolition facilities, transfer facilities and resource recovery parks. Household hazardous waste centers and material recovery facilities rated highest. The City is already implementing or has piloted household hazardous waste and curbside material recovery facilities and is working to expand its green waste center. Green waste centers scored lower under regional viability because it is difficult to permit composting facilities. Siting a construction and demolition processing center or transfer facility is also difficult but can be appropriate at certain sites.

Comment: This chart ranks financial viability for most of the options at a 3 because the City would be less able to fund such facilities. However, a private developer could fund these facilities, which would be beneficial to the overall system. The City's finances could also change in the future and make these options more viable.

Comment: Construction/demolition and transfer facilities should be rated 3 under regional viability. There is good capacity for construction/demolition waste right now, and we can expect that to continue over the next five years.

Comment: There is stakeholder support for resource recovery parks. The audience for the report will want to see that analysis.

Question: What model are you using to rank resource recovery parks and transfer facilities? I would expect capacity optimization, environmental viability and regional viability to be high.
A: A lot of the materials that would go to those facilities are already being recycled. The main purpose of a resource recovery park is the ability to site recycling and recovery businesses near or with compatible manufacturers that would need their recycling and recovery services. One business' discards could be another business' raw product and reused in some fashion in another manufacturing process This would increase efficiency, but it would not necessarily increase the amount of material being recycled. It could provide an incremental increase. Also,

manufacturers typically decide to site their facilities in certain places for several reasons, and currently, siting a facility near other facilities that could recycle their waste materials is not a strong factor for choosing a certain location.

Comment: Green Waste Facilities (Option #4) could score higher under regional viability if Sycamore Landfill installs a compost facility, as is described in its Environmental Impact Report.

Zero Waste Programs – Chip Clements
This category includes a long list of programs that were more difficult to score because their feasibility is dependent on policies being adopted but not necessarily regulated. Overall, each program on its own would result in low capacity optimization; however, individually and together many of them have high value in the other categories of regional, financial, technical and environmental viability. The City already implements many of the programs on the list.

Q: Given the recent legal challenges to the plastic bag ban in San Francisco, should we rank this option lower for regional viability?
A: The plastic bag ban is ultimately driven by an effort to reduce bag litter. Bans like these, or at least incentives to limit one-time-use bags are probably here to stay. Right now a task force is working to compromise on recovering the plastic bags instead of banning them outright. The City of San Diego considered picking up plastic bags in the curbside recycling program, but the market for the bags is not strong right now. In addition, the City and other stakeholders are supporting State Bill 2058, which would require retail stores to charge for plastic bags after 2012. While regional viability may be low today, it could be higher over the longer term.

Comment: San Diego needs to get on board supporting extended producer responsibility and stewardship activities. It will take all the regional jurisdictions working together to fight the industry lobbyists and support producer responsibility legislation. Brochures from the California Product Stewardship Council have more information. Extended producer responsibility strategies also include passing local ordinances and resolutions that support responsible purchasing policies. This language should be included with this option.

Comment: The option to increase waste hauling fees to fund recycling programs would cause concern within the hauling industry. Because the City's People's Ordinance prohibits charging residents for waste collection, the burden of paying the higher fees would fall on residents in apartments and businesses that must pay for trash pickup.

Comment: The option to increase waste hauling fees to fund recycling indicates a change in the waste management paradigm. Initially and currently, the system has been financed to assume all waste will be disposed, so recycling programs are free. As we move toward recycling more waste, we will need to figure out how these processes will pay for themselves. Some jurisdictions are moving towards charging for recycling service. For example, the Bakersfield area charges $48 per month for recycling and has little participation. However, Kern County includes fees for recycling in the trash pickup fee and has a lot of participation.

Comment: Food scraps constitute a substantial portion of the waste stream. We throw away about 40% of the groceries we buy. When the infrastructure is in place it is easy to incorporate

processing food scraps and green waste. San Fernando implemented this, and it didn't cost any more or increase transportation costs. They collect weekly. Seattle collects food waste bi-weekly. In addition, outreach programs can help restaurants waste less food, and extra support for food banks can help.

Comment: I would suggest removing the option to renovate functional buildings. Building renovations are handled by the Development Services Department, not Environmental Services.

Comment: The City passed an ordinance for Multi-family Curbside Recycling (Option #6, page 3), so it should be highlighted in green.

Q: What does it mean to Use Reusable Shipping Containers (Option #12, page 1)?
A: As the City refines its procurement practices, it could stipulate that vendors have to report how much of their product is green, including shipping in reusable containers whenever possible.

Comment: Some of these programs are good ideas, such as the education programs, but seem to be on a different scale as other options in terms of capacity optimization. Perhaps the education programs can be rolled into one category. In the report, the really "big ticket" categories can be discussed broadly and include a few examples.

Comment: Support Landfill Surcharges (Option #11, page 3) should be removed. All options will need to be financed in some way, so this does not really count as an option for this plan.

Q: The Master Gardeners have a huge school garden program, and the same schools could use the compost in their gardens. How does the Composting at Schools Program (Option #2, page 5) work?
A: The City has a contract with Solana Center to train master composters and put worm bins in schools so the compost can be used at the gardens. The program is not easy to implement because the worm beds need a lot of maintenance.

Public Comment
Bob Cattolica, UCSD Aerospace Engineering Professor –
I agree with the committee's ranking of gasification/pyrolysis and digestion. Digestion is more suitable for processing food waste, whereas thermal and gasification techniques are better for urban green waste trimmings. Right now I'm working on building a facility to process five tons of biomass per day into mixed alcohols that can be used to produce energy. The system was built and tested based on a Japanese design for a 150 ton per day facility. Another facility at UC Davis digests food waste. We're working on new technologies at small scales. Last week a 6,000 ton per day biomass-to-liquid facility opened in Germany; it cost $400 million to construct and can make 100 million gallons of diesel. Our project at UCSD is now at the pilot level but could rapidly be expanded to process 150 tons per day, which translates to a three megawatt power plant or three million gallons of fuel.

Q: What is the residual waste from this process?
A: The processed wood waste produces five percent of its original volume in ash. Our test

facility is located next to a concrete manufacturing plant that is using our residual to make concrete.

Comment: SDG&E's proposed Sunrise Powerlink project is talking about using alternative energy systems. Maybe we should look at that project as a way to get biomass into the system.

Next Meeting
The next RMAC meeting is scheduled for June 18. At this meeting the committee will help City staff identify options to recommend for further analysis in Phase 2; this will wrap up Phase 1 of the process. Recommended options will be presented to the City Council for approval at either the July or September meeting. Council is in recess during the month of August.