

Final Report for Contract # IWM-C9061

Food Scrap Diversion at Indian Wells Tennis Garden

INTRODUCTION

The purpose of this contract was to determine the viability of food scrap diversion at a large venue. The project provided data on the costs, benefits, and diversion potential of a large scale food scrap diversion program at the Indian Wells Tennis Garden. This facility is located on 189 acres and has stadium seating for over 16,000 guests. In addition to the Tennis Masters Series (with a year 2001 attendance of over 190,000 for the two week event), the project diverted food scraps from two additional one night concert events. In all cases, for the three different events, we found that food scrap diversion is both feasible and economically viable.

PROJECT IMPLEMENTATION

The project was implemented in the following four phases:

- (1) Project Organization/Logistics
- (2) Pilot Test of Program Logistics - Boston Pops Concert
- (3) Full Scale Implementation - Tennis Masters Series
- (4) Wrap-up Event with Modified Improvements - Pavarotti Concert

A detailed description of the implementation process and the results achieved in each of the four phases is provided below.

PHASE ONE - PROJECT ORIENTATION/LOGISTICS

Examples of tasks performed during this phase were:

- Meet with Restaurant Associates (food preparation vendor) to provide overview of program, identify issues, incorporate any concerns into program implementation;
- Obtain preliminary number of meals expected to be served;
- Meet with facility manager to gain design approval of food scrap containers. Order containers;
- Design and prepare signage for containers;
- Develop site map showing placement of food scrap containers.

First Phase Results

The first phase was devoted to identifying all the logistical and managerial components necessary to successfully implement a food scrap diversion program.

Team Development

This was accomplished through the development of very specific action steps and assignment of responsible parties to each step. A series of meetings was then held with various combinations of all five team members to assure internal "buy-off" and external cooperation. The project team consisted of Tennis Garden staff, EcoNomics, Waste Management, Cal Bio-Mass and the City of Indian Wells. In addition, the cooperation of Restaurant Associates (a national catering firm) and various sub-contractors were identified as vital to the success of the program.

Container Selection

After discussions and analysis, two types of containers were purchased for the event. Sixty-five gallon toters were used in the kitchen and throughout the stadium in the "behind the house" staging areas. Twenty-two gallon slim-jim containers with a sandstone finish were used for in-suite usage and other public areas. For the twenty-two gallon containers, three different lid styles were ordered to assess their impact on lowering material contamination levels.

Container Placement

The placement for each container was then designated on a 36" x 60" engineering drawing of the facility and the surrounding grounds. An 8.5" x 11" color version of the map is enclosed in Appendix 1.

Signage

Signage for the containers consisted of a low cost 3.5" x 8" sticker with FOOD SCRAPS ONLY in blue lettering on a white background. For in-suite and public areas, table-top signs were designed by the City's graphic design firm and tested in the suites for acceptance.

PHASE TWO - PILOT TEST OF PROGRAM LOGISTICS - BOSTON POPS CONCERT

The second phase used the Boston Pops Christmas Concert to pilot test the proposed action plan. Specific tasks accomplished were:

- Verification of the projected amounts of food waste.
- Confirmation of the meal distribution pattern for two in-stadium concession stands; thirty-two booked view suites; three main level temporary bar setups.

- Presentation of working implementation plan to Tennis Gardens management for review and acceptance.
- Providing training requirements and identification of management action needed to implement training. Development of training program for Tennis Garden janitorial staff.
- Conducting training session(s) for Restaurant Associates kitchen staff and chefs and Tennis Garden janitorial staff .
- Placement of specially designated food scrap collection containers throughout facility and adjacent grounds.
- Preparation of press packet explaining program.
- Actively monitoring and adjusting the number, size, placement and frequency of service for the specially designated food scrape containers.
- Working with California Bio-Mass throughout event to modify collection and/or container placement to achieve the highest diversion within the allowable contamination level.

Second Phase Results

A detailed description of the results of the second phase was compiled for this contract's second quarterly report. (See Appendix 2) A summary of the results is presented in this section.

Logistics

The basic logistics of the food diversion program worked. Size of containers, placement, and movement were all within 80% of the expected outcome. A total of 1,500 meals were prepared for the event. The 789 pounds of food waste diverted equals approximately 1.9 pounds of food waste captured per meal prepared. In addition, approximately 100 pounds of food was picked up by Martha's Kitchen for use in a community food bank. Observations during the event, as well as the weight slips, indicate that at least 80% of the food scraps were successfully diverted.

Overall, program logistics encountered no significant surprises. The drawing showing placement of each type of container was successful in getting containers into the right areas of the kitchen, stadium and the surrounding grounds. However, for actual event usage, on-sight adjustments were made throughout the evening for better capture of the waste and improved loading, unloading and movement of the containers. The staff of the Tennis Garden was only contacted when a new configuration was developed. This minimized work disturbances of their

time but allowed the new container positions to be communicated to the janitorial staff via the Tennis Garden's normal management channels.

Signage

Signage problems were encountered. Improvements in signage (did not stick to sandstone finish or to toters), timing of container setouts, and movement of some containers from patron areas to behind the bars and within the service areas within the suites were noted as needed to improve the program.

Training

Training was sufficient to achieve diversion, however, additional training at the suite attendant level in Spanish was recorded as crucial. There were several additional management changes noted that would improve results including: increasing the visibility of the program through special uniforms for the recycling team and; the use of recycling revenue to provide incentives for the janitorial team.

Most importantly, the composting facility, California Bio-Mass, reported that the food scraps met their requirements and could be used in their composting operation.

PHASE THREE - FULL SCALE IMPLEMENTATION - TENNIS MASTERS SERIES

The third phase was the full scale implementation of the program during the Tennis Masters Series. The event was held March 5 - 18, 2001. The actual implementation process including: final container orders, revised signage, container assembly, and modifications of secondary staging areas was started on March 1, 2001. Specific tasks accomplished were:

- Final confirmation of the projected amounts of food waste.
- Redesign of the collection process. The food scraps would be recovered outside the suites in staging rooms located on each floor of the stadium.
- Presentation of revised implementation plan to Tennis Garden's and Restaurant Associates' management for review and acceptance.
- Production of two training videos. One in Spanish and one in English for training kitchen and grounds staff;
- Development of three color scheme to identify trash, food scraps and commingled recyclables containers. Printing of wallet cards with the color code in both English and Spanish;
- Redesign of container stickers
- Production of posters for use in kitchen and staging areas;

- Incorporation of training video viewing into the daily staff briefings at both the managerial and staff levels;
- Expansion of placement of specially designated food scrap collection containers throughout facility and the adjacent Food Court;
- Production of video explaining program in a live "man-on-the-street" interviews of actual guests on the first day of the event. This video was then broadcast daily on the Food Court Jumbotron and into the closed circuit camera network in the stadium suites;
- Preparation of press packet explaining program.
- Actively monitoring and adjusting the number, size, placement and frequency of service for the specially designated food scrape containers.
- Working with California Bio-Mass throughout event to modify collection and/or container placement to achieve the highest diversion within the allowable contamination level.
- Finalize decision between Waste Management and Tennis Garden's management on the use of one 10 cubic yard rolloff box for holding and transport of food scraps;
- Collect and tabulate weight slips on refuse, compost, and recycling loads. Cross-check totals with scale records
- Calculate sub-wastestream flows, balances, and diversion rates
- Compile net program costs/savings
- Compile observations on barriers, solutions, and suggested modifications

Third Phase Results

Over 100,000 meals were served during the event. A total of 56.56 tons of waste, food scraps and recyclables were produced during the fourteen days of the Master Series, The program successfully diverted 8.13 tons of food scraps. This represents a diversion of 14.4% of the total wastestream generated during the event. In addition, the increased focus on waste handling brought about by the implementation of the food scrap diversion, led to an increase in the recovery of cardboard and commingled recyclable containers. A total of 9.65 tons of cardboard and 1.82 tons of commingled plastic and aluminum containers were diverted. These figures represent an additional diversion of 17.1% and 3.2% respectively. The total documentable diversion rate for the event is 34.7%. (The actual diversion rate is likely to be 2 to 3 percent higher as a

management decision was made to allow any employee to recycle the aluminum and plastic containers for redemption at recycling centers.)

Cost Analysis

The project saved the Tennis Gardens \$558 through the reduction or elimination of the normal \$30.00 per ton tip fee. This savings is calculated by taking the 56.56 tons of material generated by the event and multiplying it by the \$30/ton tip fee charged at the local landfill. This equals a total of \$1,696.80, which is what the Tennis Garden would have paid if no diversion program was in place. Instead, only 36.96 tons was dumped at the landfill (total of 56.56 tons minus 8.13 tons of food scraps minus 9.65 tons of cardboard minus 1.82 tons of commingled recyclables). The 36.96 tons disposed multiplied by \$30 per ton equals the reduced tip fee total of \$1108.80, which yields the \$588 savings in tip fees.

The only additional labor costs incurred were the incremental time spent in training the kitchen and janitorial staff. An estimate of this incremental cost is arrived at by taking the 15 extra minutes in training multiplied by 35 people who were involved in the program. This yields a training time of 8.75 hours. At a blended rate of \$11/hour, the total training cost was approximately \$96.25.

An additional \$1,500 in savings were realized through a closer attention to pickup frequency and the consequent reduction in transportation costs. It is expected that as the program is refined these cost could be further reduced over time.

Overall the Tennis Garden saved between \$1,500 to \$2,000 on its waste disposal services. This savings would be needed in order to hire an on-site recycling coordinator to oversee the event if the City or State discontinued its funding of the project. This conclusion is based on a ten day event. The indications from the project are that the Tennis Garden would likely realize similar magnitudes of savings per event multiplied over a year of concerts and sporting events. This cumulative effect may be sufficient to allow the Tennis Garden's management to explore the possibility of assigning the recycling duties to existing internal staff or hiring an intern from one of the local college environmental programs to assist internal staff on future programs.

Time Commitment

A high degree of cooperation and support by Restaurant Associates and the Tennis Garden management was needed to achieve the 34.7% diversion rate.

Waste Management assigned their recycling coordinator to work almost exclusively on the project for ten consecutive days and also authorized

\$200 at a crucial point to hire temporary labor to assemble containers. Finally, under conditions of extreme workloads the head chef of Restaurant Associates took time to view the draft training video, schedule training time for his staff, and make very helpful suggestions as to how to improve diversion during the food preparation stages.

Program Description

The final configuration of the diversion program required a different focus for each of the three areas of the event: the kitchen, the food court, and the suites. (NOTE TO READER: If the two videos accompanying this report are available please view them at this time. Contact EcoNomics at 800-640-7915 if video is not available with your copy of the report.)

Kitchen

The first point of focus was on the kitchen area. This includes the loading dock and the dispatching of food delivery to the suites. The key kitchen staff were the chef and his staff, the food dispatcher, and the kitchen cleanup crew. Also involved were the bar stock room and dishwashing. The kitchen/loading dock was the key critical area for contamination control. The head of the bar restocking room was very supportive of the program and he took on the responsibility of making sure that all wine bottles were separated from the food waste. In addition, the food scrap rolloff was located such that it was necessary to walk past the trash rolloff. Thus if someone was in a hurry they would throw the bag into the trash container rather than throwing trash into the food container and contaminating the food load.

Food Court

The second focus point was the food court. This portion of the program focused on the public. There were three color coded containers throughout the food court. One for trash, another for food scraps and a third for commingled recyclable containers. The containers are the Plaza model manufactured by Rubbermaid. The food court is an area of approximately one acre where various casual food and drink vendors were located. The Jumbotron was also in this area and is used to broadcast the current matches being played in the main stadium. The Jumbotron medium was used to broadcast a "man-in-the-street" video that explained the food scrap diversion program and how to use the food and recycling collection containers located in the food court area.

Four janitorial staff were used to service the food court area. They were trained to empty the three different containers. They were shown a training video in Spanish and were given a wallet- sized reference card that was printed in the three colors showing the corresponding type of container (i.e. trash, recyclables, and food). This arrangement was the most cost effective as it required no additional staff to empty the

containers. The only additional cost was the hour spent in training. In addition, this staff was provided with name brand shirts embroidered with the food scrap program emblem.

Suites

The third area of focus was the suites (similar in concept to skyboxes). A wide variety of chef prepared hors d'oeuvres, lunches, wine, and complete three course meals are served during the matches. In order to make the program invisible to the suite guests, all recovery activity was done in staging rooms that are located on each level of the stadium. The critical people in this area of the program were the individuals responsible for taking orders for the delivery of meals, drink, and maintaining the bars stocks. Each person is responsible for a set number of suites and, in coordination with the meal dispatcher in the kitchen, controls the timing and flow of food and beverage into, and out of, the suites. Again, the environmental benefits of the program were appreciated by these individuals and they worked on timing and container placement and training of the suite staff to recover over 80% of the food removed from the suites.

Public Information

In addition to the logistics of the event itself, a broad public information program was also developed. The press packets contained six articles. Four of the articles focused on the food scrap and composting elements of the program exclusively. The remaining two described the tennis stadium and event in the context of the food diversion program. They were used by both local and regional newspapers as well as serving as briefing sheets for national television announcers. We were fortunate that even some of the tennis players themselves found the program very worthwhile. In particular, the Swiss women players mentioned the program favorably in some press interactions.

Compost

A total of eight loads were received by Cal Bio-Mass. The loads averaged 1.0 tons with a low of 0.26 tons and a high of 2.15 tons. The ten cubic yard open-top rolloff box proved to be an ideal size to collect the food scraps on-site and transport them to the compost facility. The loads were inspected and weighed by Cal Bio-Mass and were then skip loaded into grids containing a base of greenwaste. The compost process has been monitored and the final composted material will be inspected in November 2001.

PHASE FOUR - WRAP-UP EVENT/MODIFIED IMPROVEMENTS - PAVAROTTI CONCERT

This final phase was another one night concert event. Similar to the other events, full meals with wine selections were prepared in the kitchen and delivered to the suites. Examples of tasks performed during this phase were:

- Meet with Restaurant Associates (food preparation vendor) to review suggestions on improvements in food capture in the preparation stage;
- Observe if container placement patterns had been internalized in the kitchen staff;
- Observe if awareness of importance of eliminating wine bottle glass contamination had been internalized in the kitchen staff;

Fourth Phase Results

This final phase was designed to test (1) How well suggested modifications worked and (2) Whether the concepts of the program had been internalized into the normal operational procedures.

Modifications

During the Tennis series program modifications were made on-the-fly during the first few days and then tapered off towards the end of the event. The Pavarotti concert allowed a closer observation of the effect of the modifications.

Container Style & Placement & Size

The original containers for use in the kitchen were twenty-two gallon slim-jims. They are almost identical in size, height, and shape to trash containers used in standard commercial kitchens. They are placed at the end of the food preparation tables and scraps are slid off the tables into the containers. Unfortunately, despite signage, the pattern of usage for the similar types of containers made it problematical to capture food preparation waste. The head chef suggested that if we substituted well signed bus tubs that the staff would easily be able to place the scraps in the bus tubs and then they could be emptied into the designated food scrap containers. These containers were then taken out to the loading dock and emptied into the food scrap rolloff box. The modification worked extremely well and capture of food preparation scraps neared the 100% level.

Sixty-four gallon toters are too heavy if they are filled with food scraps. During the busy times of the event containers weighed over 200 pounds and needed to be emptied with a forklift. A thirty-two gallon container will be more easily moved and emptied.

Container Availability

The end of the day cleanup (its actually at night) can be rushed and fatigue levels are high. At the end of the day's event, some suite personnel were trying to use the recycling containers as "extra" trash cans when their trash can overflowed. Training combined with simple nesting of trash containers to increase availability solved the problem.

Internalization of Program

All janitorial staff and kitchen staff were familiar with the program concepts, however, there was a need to remind both staff and management that the program was going to be done for the event. Once the announcement was made, signage went up. containers were placed and everyone followed the developed procedures. It was the institutional equivalent of reminding everyone to turn off the lights when not in use. The concept is clear and understood but the habit pattern is still not ingrained.

OVERALL PROJECT FINDINGS & GOAL ACHIEVEMENTS

This section provides a listing of the significant findings and observation gained from implementing the program that would be applicable to implementing food scrap diversion programs at other large venues. It also reviews the original goals of the project and compares the results actually obtained against the hoped for goals.

FINDINGS AND OBSERVATIONS

- Advanced, and extremely detailed, planning is critical for success. The events themselves are too fast-paced to allow for planning close to, or during, the event.
- Well focused meetings with all parties having anything to do with the event is equally critical. Everyone from food staff to security has to know and accept the program. For example, security needs to know about the program so they allow movement of containers and staff quickly during the event. Food inspectors need to be aware so that they do not stop the program because they are unsure of the "safety" of the program. Other similar examples too numerous to list could be cited on the wide variety of people and functions that needed to be aware that a food scrap program was being implemented.
- Signage can make or break the program. Well designed, color coded, and bilingual are extremely helpful in communicating the basic ideas and procedures of the program.
- If budgets allow, training videos showing the program procedures are the most successful training tools. Again, the videos should be both in English and Spanish.

- Glass is the one contaminant that needs a zero tolerance approach. One bottle in a one ton load of compost can ruin the entire load if it breaks and gets mixed in the load. The most effective method of keeping the glass out of the loads is to identify one or two key people who have control of the loading dock area. Make a glass container very accessible and reward people for getting the glass in the "glass only" containers. Finally, the program coordinator needs to spot check the food scrap rolloff bin regularly for glass contamination.
- Remain flexible. Introducing a new program at large venues is likely going to be viewed by existing staff as adding more tasks to an already crowded work schedule. The value of the program must be communicated to the event staff. Many personally believe in recycling and will support the program when the environmental benefits are explained. The program implementors (e.g. city staff, consultants, waste hauler staff, etc.) must demonstrate their willingness and ability to work within the high stress organizational structure of the special event staff as visiting "team players". Once this is demonstrated, then the event staff will support the diversion program.
- Investigate use of biodegradable plates and utensils which could be recycled (composted) with the food waste. These have been pilot tested in schools and would allow a much greater amount of waste to be diverted.

GOAL ACHIEVEMENTS

The following goals were listed in the City of Indian Wells' response to the CIWMB's Request for Proposal on Food Scrap Diversion. Each goal is listed and the corresponding program achievement level is noted.

The Food Scrap program objectives are:

1. Divert a projected 70+% of all food waste generated during the facility's major events.

The program achieved this goal. The highest diversion levels were achieved in the kitchen and the suites. Diversion levels in excess of 90% were regularly seen. The Food Court area was the greatest challenge but was still able to divert over two thirds of the food scraps generated by the general public. The food court diversion levels would greatly benefit from the introduction of biodegradable

plastic plates and utensils. If this could be implemented, diversion rates would approach the same high levels as the kitchen and suites.

2.Reduce the Tennis Gardens' disposal bill by 15%.

The total Tennis Garden bill was slightly above \$11,000 for the period of March and April 2001. Documentable savings of \$588 due to decreased tip fees yields a reduction of 5%. An additional reduction of approximately \$1,500 was estimated from better bin collection monitoring due to program implementation. This would yield an additional "soft" savings of 13%. Combining the documentable and the "soft" savings yields a total disposal bill reduction of 18%.

3.Conclusively demonstrate the applicability of food waste composting on a large scale.

As noted above, a total of eight loads were received by Cal Bio-Mass. The loads averaged 1.0 tons with a low of 0.26 tons and a high of 2.15 tons. The ten cubic yard open-top rolloff box proved to be an ideal size to collect the food scraps on-site and transport them to the compost facility. The loads were inspected and weighed by Cal Bio-Mass and were then skip loaded into grids containing a base of greenwaste. The compost process has been monitored and the final composted material will be inspected in November 2001. The scale of this composting demonstrates the ability of large scale food scrap composting.

4.Utilize compost produced from the program in the Tennis Gardens landscape program.

Arrangements have been made to take the compost in December of 2001 to be used for top dressing and mulch on the Tennis Garden grounds.

5.Showcase the program on local, regional, and national television, concert venues and other educational outlets.

A broad public information program was developed for the program. The press packets contained six articles. Four of the articles focused on the food scrap and composting elements of the program exclusively. The remaining two described the tennis stadium and event in the context of the food diversion program. They were used by both local and regional newspapers as well as serving as briefing sheets for national television announcers. We were fortunate that even some of the tennis players themselves found the program very worthwhile. In particular, the Swiss women players mentioned the program favorably in some press interactions.

It is possible that a 30 second informational item may be produced for the 2002 Masters Series for use on ESPN. A decision is expected by early next year.

6. Create a template for event recycling and food diversion programs.

The observations provided in this report as well as the other detailed operational procedures provided in previous reports allow a managerial and operational template to be constructed for use in other large venues.