Appendix G

STATE OF MICHIGAN

JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: http://www.deq.state.mi.us

RUSSELL J. HARDING, Director

REPLY TO:

WASTE MANAGEMENT DIVISION
PO BOX 30241
LANSING MI 48909-7741

ENVIRONMENTAL PROTECTION BOND FUND
FISCAL YEAR 1995/96 SOLID WASTE ALTERNATIVES PROGRAM
GRANT CONTRACT
BETWEEN
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
WASTE MANAGEMENT DIVISION

AND

This Contract takes effect on this _____ day of _____, , by and between the Michigan Department of Environmental Quality, Waste Management Division (Grantor) and (Grantee).

I. STATEMENT OF PURPOSE

The purpose of this Contract is to provide for the implementation of a **Market Development** project (the Project). The Grantor is authorized to provide grant assistance for the Project pursuant to Michigan's Natural Resources and Environmental Protection Act, Part 195 of 1994 Public Act 451, as amended (Act 451), (formerly Act 328), and the Solid Waste Alternatives Program Administrative Rules promulgated thereunder (the Rules). Legislative appropriation of funds for the Project is set forth in **1995** Public Act **180.** This Contract establishes the terms and conditions under which the Grantor will provide grant assistance to the Grantee for implementation of the Project.

II. GENERAL CONDITIONS

(a) This document, its Appendices (attached hereto and made a part of this Contract) and the referenced Fiscal Year 1995/96 Solid Waste Alternatives Program grant application constitute the entire agreement between the Grantor and the Grantee and may be modified only in writing and executed in the manner that this document is executed. Where the terms of this Contract and the grant application differ, the terms of this Contract shall prevail.

(b) The time period allowed for Project Completion (as defined in Appendix A) shall be _____, through _____

(c) This Contract shall remain in effect for **ten (10) years** after the date of Project Completion, as certified by the Grantor (the Contract Period). The Grantee shall maintain and operate the completed Project during the Contract Period.

(d) The Grantor agrees on the terms and conditions of this Contract to make available to the Grantee grant assistance in an aggregate principal amount of up to but not exceeding _____

(e) The Grantee shall provide the required matching fund share for the Project.

(f) The Grantee is solely responsible for Project cost overruns.

(g) The Grantee shall comply with Act 451 and the Rules.

(h) The Grantee shall comply with all applicable federal, state and local laws, rules, ordinances and regulations and will obtain all applicable permits and licenses.

(i) Except as permitted under Grantee's NPDES permit No. MI0003166, the Grantee shall use only licensed solid waste disposal areas for the disposal of its solid waste and shall not conduct, manage, maintain or participate in the operation of a solid waste disposal area not licensed under Part 115 of the Natural Resources and Environmental Protection Act, 1994 PA 451, MCL 324.11501-324.11549. The Grantee shall not knowingly allow its solid waste to be disposed of at an unlicensed solid waste disposal area.

(j) The filing of false or fraudulent information with the State of Michigan for the purpose of obtaining this Contract or any payment pursuant thereto is a crime and may subject the Grantee, its agents, and/or employees to criminal and civil prosecution. Notwithstanding the provisions set forth under Section VII. (a) of this Contract, the filing of false or fraudulent information constitutes a violation of the terms and conditions of this Contract and subjects this Contract to immediate termination by the Grantor and the Grantee shall repay to the Grantor all grant funds received under this Contract.

(k) The Grantee shall secure the necessary personnel to complete the Project. All personnel shall be employees under the direct supervision of the Grantee or shall be directly responsible to the Grantee as a Subcontractor. The Grantee and/or its Subcontractors shall accept responsibility for and make payments as required by law for workers' compensation insurance, social security, income tax deductions, unemployment compensation and other taxes or payroll deductions as required by law for its employees.

(l) If any clause, provision or section of this Contract is held illegal or invalid by any court, the invalidity of such clause, provision or section shall not affect any of the remaining clauses, provisions or sections hereof and this Contract shall be construed and enforced as if such illegal or invalid clause, provision or section had not been contained herein.

(m) The Grantee shall not assign or transfer any interest in this Contract without the prior written authorization of the Grantor.

(n) The captions or headings in this Contract are for convenience only and in no way define, limit or describe the scope or intent of any provisions or sections of this Contract.

(o) The Grantee may be subject to federal, state and local income tax on this grant. All tax liabilities are the responsibility of the Grantee.

(p) The Grantee shall purchase and use recycled materials and products, to the maximum extent possible, in the completion of the Project.

(q) The Project shall be located in the State of Michigan.

(r) The Grantor in its sole discretion shall determine whether the Grantee is in compliance with the provisions of this Contract.

(s) All documentation submitted in connection with a grant application or as part of the grant process shall become the property of the Grantor.

III. CONTRACT REPRESENTATIVES AND CONTRACT NOTICES

The Grantor's representative for this Contract is the Chief of the Waste Management Division, Michigan Department of Environmental Quality. The Grantor's representative may appoint other personnel to act in their behalf. Notices to the Grantor shall be sent to the following address:

Michigan Department of Environmental Quality
Waste Management Division
Solid Waste Program Section
P.O. Box 30241
Lansing, Michigan 48909
517-335-4863

The Grantee's representative for this Contract is _____. The representative may appoint other personnel to act in their behalf upon written notice to the Grantor. Notices to the Grantee shall be sent to the following address:

_____
(Grantee Name)

_____
(Street Address)

_____
(City, State and Zip Code)

_____
(Telephone Number)

All notices, reports, requests or other communications hereunder shall be sufficiently given when mailed and addressed as required herein. The Grantor and Grantee may by written notice designate a different address to which subsequent notices, reports, requests or other communications shall be sent.

IV. PROJECT CHANGES

During the Contract Period, the Grantee shall not make any changes to the Project without prior discussion with and written authorization of the Grantor.

Project cost savings incurred during Project Completion may be expended on other eligible Project costs that are identified in the application or on new eligible project costs after the Grantee receives prior written authorization from the Grantor.

When delays are caused by circumstances or conditions beyond the control of the Grantee, as determined by the Grantor in its sole discretion, the Grantor may by written authorization allow the Grantee a reasonable extension of time for Project Completion. Such extension shall not operate as a waiver by the Grantor of any of its rights herein set forth.

V. GRANTEE NAME CHANGE; SALE OF BUSINESS ASSETS

The Grantee shall provide advance written notification to the Grantor of any intent to change its name. The Grantee shall not merge into or consolidate with any other person or permit any other person to merge into or consolidate with it, or sell, lease, transfer or otherwise dispose of all or substantially all of its assests, except that the Grantee may merge into or consolidate with it, or sell, lease, transfer or otherwise dispose of all or substantially all of its assests to another corporation so long as (i) the corporation which survives such merger or results from such consolidation or acquires all or substantially all of the Grantee's assests (the"surviving corporation") shall be organized under the laws of the United States of America or a jurisdictionthereof, (ii) the Grantee shall be the surviving corporation, or the due and punctual performance and observance of all the terms, conditions or provisions of this Contract to be performed or observed by the Grantee shall be expressly assumed in writing by the surviving corporation, and (iii) an opinion of counsel is delivered to the Grantor upon consummation of the transaction to the effect that the conditions to the transaction contained in this sentence have been satisfied and to the effect that this Contract is the legal, valid and binding obligation of the surviving corporation.

VI. WITHHOLDING OF GRANT PAYMENTS

The Grantor may withhold grant payments if the Grantee i) violates, fails or refuses to comply with the terms and conditions of this Contract, ii) violates, fails or refuses to comply with the requirements of Part 195 of Act 451 or its Rules, or iii) is unable to proceed with the Project, as determined by the Grantor.

VII. CONTRACT TERMINATION

This Contract may be terminated by the Grantor upon occurrence of any one of the following:

(a) The Grantee violates, fails or refuses to comply with any term, condition or provision of this Contract and fails to remedy the breach within thirty (30) days or some other reasonable period of time as the parties may mutually agree, after written notice to the Grantee of the nature and extent of the default and, if appropriate, recommended actions to remedy the breach.

(b) The Grantee (i) applies for or consents to the appointment of a receiver, trustee, or liquidator of itself, or of all or a substantial part of its assets, (ii) is unable, or admits in writing its inability, to pay its debts as they fall due, (iii) makes a general assignment for the benefit of its creditors, (iv) is adjudicated a bankrupt or insolvent, (v) files a voluntary petition in bankruptcy or a petition or an answer which seeks reorganization, an arrangement with creditors, or seeks to take advantage of any insolvency law, (vi) files an answer admitting the material allegations of a petition filed against it in any bankruptcy, reorganization, or insolvency proceeding, or (viii) takes any corporate action for the purpose of effecting any of the foregoing.

(c) An order, judgment, or decree is entered, without the application, approval or consent of the Grantee by any court of competent jurisdiction, approving a petition seeking reorganization of the Grantee or appointing a receiver, trustee or liquidator of the Grantee or of all or a substantial part of any of its assets, and such order, judgment or decree continues unstayed in effect for any period of more than thirty consecutive days.

If the Grantor terminates this Contract for any one of the reasons set forth in subsection (a), (b) or (c), the Grantee shall refund to the Grantor all grant funds received under this Contract and the Grantee shall forfeit any unpaid balance of grant funds authorized under this Contract.

The Grantor's obligations under this Contract are contingent upon and subject to the availability of funds appropriated for this purpose. This Contract may be terminated by the Grantor due to executive order or legislative reductions. The Grantor shall provide thirty (30) days written notice to the Grantee before termination due to executive order or legislative reductions.

This Contract may be terminated by the Grantee upon a thirty (30) day written notification to the Grantor of the Grantee's desire to terminate the Contract. If the Grantee terminates this Contract, the Grantee shall repay to the Grantor all grant funds received under this Contract over a reasonable period of time as the parties mutually agree and the Grantee shall forfeit any unpaid balance of grant funds authorized under this Contract.

VIII. PUBLICATIONS, EDUCATIONAL AND PROMOTIONAL MATERIALS

All presentations, educational and promotional materials, training materials or publications such as brochures, fact sheets, posters, news articles, audio-visual materials or research papers to be developed or distributed as a part of the project must be approved by the Grantor prior to the development or distribution of the materials and shall include the following statement: "Funding for this project has been provided by a grant from the Department of Environmental Quality under the Protecting Michigan's Future Bond Program."

Promotional materials, such as brochures, news articles, videos and displays, related to Project operations and utilized by the Grantee during the Contract Period, shall include appropriate acknowledgment of funding received by the Grantee from the Department of Environmental Quality under the Protecting Michigan's Future Bond Program.

IX. SIGN DISPLAY

A sign, if provided by the Grantor, shall be displayed at the Project site. The sign shall provide recognition that work performed on the site is being funded through a grant from the Department of Environmental Quality under the Protecting Michigan's Future Bond Program. The Grantee agrees to display the sign in accordance with Grantor specifications. The Grantee may provide an alternative sign upon approval by the Grantor.

If the Grantee intends to display a sign or lettering on structures or equipment purchased under this Contract, the sign or lettering shall include recognition of the funding received from the Department of Environmental Quality under the Protecting Michigan's Future Bond Program.

X. COPYRIGHTS

The Grantor shall have copyright, property and publication rights in all written or visual material or other work products developed under this Contract.

XI. AUDIT AND ACCESS TO RECORDS

The Grantee shall maintain books, records, computer records, documents and other evidence directly pertinent to the performance of work under this Contract in accordance with generally accepted accounting principles and practices. The Grantee shall also maintain the financial information and data used by the Grantee in the preparation or support of the cost submission. The Grantor and its authorized representatives shall have access, upon reasonable notice, to such books, records, documents and other evidence for the purpose of inspection, audit and copying. The Grantee will provide proper facilities for such access and inspection. The Grantee shall maintain all records during the Contract Period.

XII. NON-DISCRIMINATION

The Grantee shall not discriminate against an employee or applicant for employment and shall comply with all laws, rules and regulations involving civil rights, the handicapped, equal opportunity and affirmative action, including but not limited to Title VII of the Civil Rights Act of 1964, Public Act 453 of 1976 of the State of Michigan, and Public Act 220 of 1976 of the State of Michigan. Any Subcontract shall contain this non-discrimination provision.

XIII. SUBCONTRACTORS

For the purpose of this Contract, a Subcontractor shall be defined as a person, sole proprietorship, partnership, corporation, association, or unit or agency of government which the Grantee uses to perform all or a portion of the Project.

Subcontractors and outside associates or consultants required by the Grantee in connection with services covered by this Contract will be limited to such individuals or entities as were specifically identified in the grant application, or as are specifically authorized in writing by the Grantor during the performance of the Project.

Any substitutions in or additions to such Subcontractors, associates, or consultants will be subject to the prior written authorization of the Grantor. The Grantee is solely responsible for the performance of the Subcontractors.

XIV. CONFLICT OF INTEREST

No member of the legislative, judicial or executive branch of state government or any local unit of government official shall benefit from this Contract.

XV. LIABILITY INSURANCE

The Grantee shall acquire and maintain, or cause to be acquired and maintained, insurance which will protect the Grantee from claims which may arise out of or result from the Grantee's operations under this Contract, whether performed by the Grantee, a Subcontractor or anyone directly or indirectly employed by the Grantee, or anyone for whose acts any of them may be liable. Such insurance shall be with responsible companies in such amounts and against such risks as are ordinarily carried by similar entities, including but not limited to public liability insurance, workers' compensation insurance or a program of self-insurance complying with the requirements of Michigan law. The Grantee shall provide evidence of such insurance to the Grantor at its request.

XVI. INDEMNIFICATION

Except for disbursements of grant proceeds pursuant to this Contract, the Grantor and its members, officers, agents and employees (the Indemnified Persons) shall not be liable to the Grantee for any reason. The Grantee shall indemnify and hold the Grantor and the Indemnified Persons harmless from any loss, expense (including counsel fees) or liability of any nature due to any and all suits, actions, legal or administrative proceedings or claims arising or resulting from or connected with:

(a) The funding of the Grant or the performance by the Grantor or an Indemnified Person of any function or activity within the scope of the Grantor's monitoring of the compliance by the Grantee with the terms and provisions of this Contract; provided that the Grantee shall not be obligated to indemnify the Grantor or any Indemnified Persons under this subsection (a), including costs and counsel fees, to the extent that a court of competent jurisdiction finds that the liability in question was caused by the willful misconduct or sole negligence of the Grantor or any Indemnified Persons,

(b) Any loss or damage connected to or resulting from any work or activity performed by the Grantee or its employees, agents and Subcontractors or authorized to be performed under this Contract,

(c) Any injury or damage to any person whether an employee of the Grantee or otherwise arising out of the Grantee's performance of this Contract,

(d) Any liability for violation of proprietary rights, copyrights or rights of privacy by the Grantee ortheir employees, agents and Subcontractors arising out of this Contract.

If any action or proceeding covered by subsection (a), (b), (c) or (d) is brought against the Grantor or any Indemnified Person, that action or proceeding shall be defended by counsel to the Grantor or the Grantee as the Grantor shall determine. If the defense is by counsel to the Grantor, which is the Attorney General of the State of Michigan, or may, in some instances, be private retained counsel approved by the Attorney General of the State of Michigan, the Grantee shall indemnify the Grantor and Indemnified Persons for the cost of that defense including reasonable counsel fees. If the Grantor determines that the Grantee shall defend the Grantor or Indemnified Person, the Grantee shall immediately assume the defense at its sole cost. The Grantee shall not be liable for any settlement of any proceeding made without its consent (which consent shall not be unreasonably withheld).

Performance of the activities contemplated under this Contract is within the control of the Grantee, its employees, agents and Subcontractors and the Grantor shall have no liability in tort or otherwise from any loss or damage caused by or related to the actions, products and processes of the Grantee, its employees, agents and Subcontractors.

The Grantee acknowledges that the Grantor is not undertaking or assuming any liability or responsibility in connection with the actions of the Grantee, its employees, agents or Subcontractors, or any other person acting with or on behalf of those entities in performing activities contemplated by this Contract.

The obligation of the Grantee under this section shall survive the termination of this Contract.

XVII. EXISTENCE AND POWER

The Grantee certifies that it is validly existing and is in good standing under the laws of the State of Michigan, and is duly qualified to transact business and own real property in each state or other jurisdiction in which it conducts any important or material part of its business, and the Grantee certifies that it has the requisite power to enter in this Contract as evidenced by the attached resolution.

THE FORGOING IS HEREBY ACKNOWLEDGED AND AGREED TO:

FOR THE GRANTOR:

_____
Signature

Jim Sygo

Chief, Waste Management Division
Title

517-373-2730
Telephone Number

_____
Date

FOR THE GRANTEE:

_____
Signature

_____
Title

_____
Telephone Number

_____
Date

Grantee's Employer Identification Number:

_____

Grantee's Remittance Address:

_____

_____

_____

_____

ENVIRONMENTAL PROTECTION BOND FUND
FISCAL YEAR 1995/96 SOLID WASTE ALTERNATIVES PROGRAM
GRANT CONTRACT

APPENDIX A

CATEGORY AND PROJECT SPECIFIC CONDITIONS

I. GRANT APPLICATION; PROJECT SCOPE

The scope of the Project is outlined in the Grantee's approved Fiscal Year 1995/96 Solid Waste Alternatives Program grant application number for a **Market Development** project, which is included in this Contract as a part of this Appendix A, and any subsequent modifications to the original grant application as approved by the Grantor. The scope of the Project is limited to the activities specified herein, and such activities as are authorized by the Grantor under this Contract.

As outlined in the Grantee's application, the scope of this Project includes utilization of Old Catalogs and Magazines (OMG) and Mixed Residential Mail (MRM) generated from Michigan sources for the production of recycled de-inked pulp.

The Project will utilize the following annual quantities of OMG & MRM from Michigan sources: (These quantities are above and beyond the 5,400 tons of recyclable materials utilized annually by the Grantee at the beginning of the project.)

Year One after Project Completion:	A total of 13,900 tons of OMG. A total of 2,800 tons of MRM.
Year Two after Project Completion:	A total of 22,600 tons of OMG . A total of 5,200 tons of MRM .
Year Three after Project Completion:	A total of 25,100 tons of OMG. A total of 7,000 tons of MRM.
Year Four after Project Completion:	A total of 29,500 tons of OMG. A total of 8,400 tons of MRM.
Year Five after Project Completion:	A total of 32,200 tons of OMG. A total of 10,100 tons of MRM.
Year Six after Project Completion:	A total of 35,300 tons of OMG. A total of 11,800 tons of MRM.
Years Seven through Ten after Project Completion:	A total of 35,300 tons of OMG. A total of 11,800 tons of MRM.

The Grantee must utilize Michigan recyclable materials to meet additional project needs above and beyond the quantities identified above when Michigan materials are available at a competitive price.

II. MARKET DEVELOPMENT PROJECT CATEGORY SPECIFIC REQUIREMENTS

The Grantee shall not send collected recyclable materials to either a landfill or a solid waste incinerator. Recyclable materials do not include materials that are contaminated (i.e., the materials do not meet project specifications) and are therefore unsuitable for use in the Project.

The Grantee shall implement the approved Technology Transfer Plan.

III. REPORTING REQUIREMENTS

The Grantee shall comply with all reporting requirements of the Grantor during the Contract Period. At a minimum, the Grantee shall submit a Project summary, on a form provided by the Grantor, within three (3) months after the date of Project Completion, as certified by the Grantor, and then annually for the following ten (10) years.

IV. PROJECT COMPLETION

Project Completion for this **Market Development** Project means the Grantee's completion of all of the following during the time period allowed for Project Completion:

1. The Grantee must purchase and install all equipment funded under this Contract.

2. The Grantee must complete construction of all structures funded under this Contract.

3. The Grantee must expend Project funds in accordance with Appendix B of this Contract.

4. The Grantee must submit all reports and other written materials required under this Contract as of the Project Completion date, including but not limited to proper documentation of all expenditures, the final reimbursement request and the Grantee's Project Completion Certification form.

5. The Grantee must demonstrate the capability of meeting the Project's annual diversion goals, which includes the initiation of permanent diversion of recyclable material in the manufacture of a raw material or end-product as outlined in the grant application and any subsequent modifications to the grant application as approved by the Grantor.

V. STRUCTURES AND EQUIPMENT

Structures and equipment purchased by the Grantee under this Contract shall be used in the State of Michigan exclusively for the purposes specified in this Contract.

The Grantee hereby grants to the Grantor a security interest in any equipment and structure purchased under this Contract as the only secured party. The Grantee shall submit evidence that a Uniform Commercial Code (UCC) financing statement has been filed with the Michigan Secretary of State immediately after purchase of equipment. The State of Michigan, Department of Environmental Quality, Waste Management Division shall be identified as the only secured party for each piece of equipment.

The Grantee shall execute a mortgage in favor of the Grantor with respect to structures purchased under this Contract.

The Grantee shall not allow any other encumbrance, lien, security interest, mortgage or any evidence of indebtedness to attach to or be perfected against any equipment or structure purchased under this Contract.

The Grantee shall maintain all equipment and structures at a high level of cleanliness, safety and mechanical soundness during the Contract Period. Maintenance shall conform with the manufacturer's specifications for the equipment. The Grantee shall maintain supporting records of such maintenance.

The Grantee shall carry and maintain insurance coverage for the full replacement value of all equipment and structures purchased under this Contract. The Grantee shall provide evidence of such insurance to the Grantor at its request.

Representatives of the Grantor shall have the right to conduct periodic inspection for the purpose of confirming proper maintenance and operation pursuant to this Contract. Such inspection by the Grantor does not relieve the Grantee of its obligations hereunder, nor is such inspection by the Grantor to be construed as a warranty as to the propriety of the maintenance but is undertaken for the sole use and information of the Grantor.

The Grantee shall not sell, trade, give away or otherwise dispose of equipment or structures purchased under this Contract without the prior written authorization of the Grantor. If equipment or structures are sold or traded pursuant to this section, the Grantee shall pay seventy-five percent (75%) of the net proceeds into the Environmental Protection Bond Fund, and the Grantee shall retain twenty-five percent (25%) of the net proceeds. This paragraph does not apply to replacement of equipment parts resulting from repairs and maintenance, if all of the following conditions are met: (i) the equipment parts sold, traded or disposed of are replaced with like or improved parts; (ii) all monies received by the Grantee as the result of such a sale, trade or disposal are used to purchase replacement equipment parts; and (iii) the Grantee provides information to the Grantor, on an annual basis, of what equipment parts have been replaced.

ENVIRONMENTAL PROTECTION BOND FUND
FISCAL YEAR 1995/96 SOLID WASTE ALTERNATIVES PROGRAM

GRANT CONTRACT

APPENDIX B

COST REIMBURSEMENT TERMS AND CONDITIONS

I. GRANT AMOUNT; MATCHING FUND SHARE; GRANT BUDGET

Breakdown of eligible Project funds covered under this Contract:

Grant Amount (Maximum Grantor Share)=	$_____	(75%)
Matching Funds (Grantee Share)=	$_____	(25%)
Total Grant Budget=	$_____	

All grant budget expenditures shall be incurred during the time period allowed for Project Completion.

The grant amount and the corresponding matching fund share to be contributed by the Grantee may be reduced if the amount required to complete the Project is less than $_____ (total grant budget amount).

II. GRANTEE REIMBURSEMENT REQUESTS

This is a cost reimbursement grant. The Grantee is responsible for the payment of all eligible costs and expenses necessary to complete the Project. The Grantee shall submit periodic reimbursement requests to the Grantor which specify the time period covered by the reimbursement request and the payments made by the Grantee during the time period. The Grantor will reimburse the Grantee an amount equal to **seventy-five percent (75%)** of the eligible payments made by the Grantee during the time period, until the total of all funds paid to the Grantee equals ninety percent (90%) of the grant amount.

The Grantee shall submit a request for reimbursement at least every three (3) months during the time period allowed for Project Completion, and may only submit a reimbursement request more frequently if expenses paid during the time period equal at least twenty-five percent (25%) of the total grant budget.

The Grantee shall complete and submit the following items each time a request for reimbursement is submitted:

1. Grantee's Request for Payment form.
2. Grantee's Financial Report form.
3. Grantee's Expenditure Listing form, including supporting documentation.
4. Project Progress Report.

The Grantee shall use forms provided by the Grantor for items 1-3 above.

The Grantor reserves the right to request additional information and to make a site inspection before approving a reimbursement request.

Reimbursement of any costs pursuant to this section shall not constitute a final determination by the Grantor of the allowability of such costs. A financial audit will be completed to determine the eligibility of all costs. Reimbursement shall not constitute a waiver by the Grantor of any violation of the terms of this Contract by the Grantee.

III. WITHHOLDING OF FINAL PAYMENT; DETERMINATION OF PROJECT COMPLETION

The total of all grant funds paid to the Grantee shall not exceed ninety-percent (90%) of the total grant until the Project is complete, as certified by the Grantor. The Grantor will make the final payment to the Grantee upon the Grantor's determination of Project Completion.

The Grantor shall make a determination of Project Completion based on all of the following:

1. A review of the completed Project file including all reimbursement requests, supporting documentation, progress reports and all other reports submitted by the Grantee, to determine compliance with the terms and conditions of this Contract.

2. A review and approval of the Grantee's Project Completion Certification form.

3. A site inspection to determine compliance with the terms and conditions of this Contract.

4. The completion of a financial audit.

The amount of the final grant payment will be determined by the financial audit and will consist of eligible expenditures not covered by previous payments, not to exceed the grant amount.

Appendix H

Clean Michigan Communities Program

Comparative Report

Prepared for:

Michigan Department of Natural Resources
Waste Management Division
Resource Recovery Section
608 W. Allegan
Lansing, MI 48933

Printed on recycled paper

CLEAN MICHIGAN COMMUNITY COMPARATIVE REPORT

CLEAN MICHIGAN COMMUNITY COMPARATIVE REPORT

The State of Michigan generates over 32,000 tons of solid waste generated per day of which more than 80% is disposed of in landfills. In response to legislative initiatives a State Solid Waste Policy was adopted in 1988 to coordinate public and private sector efforts to improve solid waste management practices in Michigan. Among other things the Policy established goals for the various solid waste management technologies (source reduction, reuse, recycling, composting, waste-to-energy) and reaffirmed the intent to move away from a dependence on landfills.

Table 1: State of Michigan Solid Waste Policy Goals

Waste Management Alternative	Percent of Waste Stream
Reduction	10%
Reuse	5%
Recycling	25%
Composting	10%
Waste-to-Energy	40%
Landfill	10%

These goals were intended as voluntary and expected to vary from community to community in response to unique local characteristics. At the time of its adoption, the State's landfill diversion policy was built on a voluntary, incentives based approach that recognized that recycling, like solid waste, is largely controlled at the local level, and that the development of a collection and processing infrastructure would be driven by the interest of local governments and the private sector and facilitated by State financial assistance.

THE SOLID WASTE ALTERNATIVES PROGRAM

As a companion piece to the Policy a Solid Waste Management Implementation Plan was developed. The Plan recommended a bond program to provide financial incentives for private and public sector projects in support of the Solid Waste Policy. The Plan also recommended how those dollars should be allocated. Most of those recommendations were incorporated into the Solid Waste Alternatives Program (SWAP) which received $150 million through a voter-approved environmental issue. SWAP would provide grants and low interest loans to a range of solid waste management projects including[1]:

- Recycling Collection and Processing: Grants not to exceed $500,000 and loans not to exceed $1,000,000.
- Composting of Yard Waste and Other Selected Organic Waste Streams: Grants not to exceed $250,000 and loans not to exceed $500,000.
- Resource Recovery Education: Grants not to exceed $50,000 and loans not to exceed $100,000.
- Market Development - to increase use of recyclable material in the manufacturing of a marketable end-product. Grants and/or loans not to exceed $5,000,000.
- Market Development Research and Demonstration: Grants not to exceed $250,000 and loans not to exceed $500,000.
- Marketing Projects - to determine the feasibility of marketing or development/implementation of a plan to market a product made from recycled material. Grants not to exceed $50,000 and loans not to exceed $100,000.
- Waste Reduction Research and Demonstration - industrial source reduction or on-site recycling. Grants not to exceed $250,000 and loans not to exceed $500,000.
- Household Hazardous Waste Centers: Grants not to exceed $100,000 and loans not to exceed $150,000
- Waste-to-Energy - for recycling, composting and household hazardous waste centers to divert materials away from incineration, or for air pollution control equipment or ash reuse/recycling projects for incinerators that already have material recovery programs. Grants not to exceed $5,000,000 or 25% of the project cost, whichever is less.

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1 Descriptions from Michigan Department of Natural Resources Waste Management Division, Protecting Michigan's Future Bond Fiscal Year 1994/95 Notice of Grant and Loan Application Availability, 1993.

- Transfer Station Construction: Funding for the construction of transfer station facilities if provisions are included for the collection and/or processing of recyclables at the facility. Grants not to exceed $200,000 and loans not to exceed $500,000.

Most of the grant categories provide state funding for capital costs only and require a hard cash match ranging from 15 to 50% of the total project cost.

Since the first year applications were accepted in 1989 nearly $107 million has been approved for more than 295 projects with $50 million of that awarded in the market development category. In 1993, the SWAP grant program still represents one of the largest state coordinated efforts in the U.S. providing grant and loan support to encourage both the public and private sector in their efforts to divert material from disposal.

THE CLEAN MICHIGAN COMMUNITIES PROGRAM

In addition to providing financial assistance, it was also felt that there was a need to demonstrate "success" stories as part of the overall solid waste management strategy. Anticipating this need, one additional grant category of SWAP funding was created.

The authorizing legislation for the bond including the recommendation to create a Clean Michigan Community (CMC) grant category to identify and fund community projects that would serve as models of comprehensive recycling (collection and processing), composting and associated education. Six models – two large communities (population over 50,000); two medium communities (population between 5,000 to 50,000); and two small communities (population under 5,000) – would be established using SWAP funds for:

- a contract for technical consultant assistance to plan the six programs and to assist in implementation and evaluation,
- implementation grants to the communities to cover capital costs (no local match required) and start-up education costs, and
- technology transfer activities with targeted outreach to communities expected to use the CMC program as models for their own efforts.

The CMC grant category was established with several objectives in mind. Its purpose was driven by the fundamental need to show local examples and to encourage the development of Michigan based program leadership. For several years preceding the availability of funding, state officials, recycling organizations and municipal associations across the state had worked to educate local officials, individuals, and businesses about the benefits of recycling and composting. Conferences, publications, and one-on-one technical assistance were all used. At the time of this education process, Michigan had few working examples of comprehensive material recovery programs, so examples from communities and businesses in other states were presented. Most of the responses, from local municipal officials especially, was that recycling/composting may work elsewhere but it won't work here.

Thus the major objectives for the CMC project were to:

1) Provide model recycling, composting and education programs for local officials to observe, and

2) Build acceptance of recycling and composting as community waste management options.

The Clean Michigan Communities would provide a tremendous opportunity to comprehensively demonstrate a variety of equipment, methods, systems, record keeping and education approaches in six different demographic settings. Using a mix of technologies suited to the needs of each CMC community would allow other communities to pick and choose those pieces of a program that best fit their situation. It was felt that this approach would be a key to reaching the State's landfill diversion goals of 25% through recycling and 10% through composting.

SELECTING THE SIX CLEAN MICHIGAN COMMUNITIES

The legislature appropriated $10 million in SWAP funds for the CMC project. Most of these funds would be used to provide direct capital grants to the six CMC communities for recycling and composting equipment and for educational/promotional materials and expenses incurred in starting up the programs. No match would be required for these capital grants. However each CMC community would have to adhere to a rigorous set of program requirements including:

- Participate fully in all stages of the design, development and start-up process using technical consultants provided by the State.
- Provide all funds for long-term operation and maintenance of the programs after start-up.
- Adopt a mandatory recycling ordinance.
- Adopt a procurement policy covering the purchase of items made with recycled content materials.
- Adopt a ordinance or policy banning the burning or disposal of yard waste (Note that the legislature has adopted a statewide yard waste disposal and burn ban to be fully implemented by the Spring of 1995).
- Provide for a comprehensive record-keeping system, including reporting of data to the State.
- Work with the State on technology transfer outreach and education efforts to other municipalities - in the spirit of the "model" program objectives.

Other requirements of the program included the need to justify any purchases that would be included in each community's CMC budget by showing that no other existing entity could perform the service. This typically required some integration of private sector capabilities into the program plan (e.g. private operation of a municipally-owned recycling facility) or solicitation of information/proposals from private operators to determine the cost effectiveness/affordability of those services. As well, any equipment purchased with CMC funds needed to be retained as the property of the community - often requiring some type of lease arrangement if the municipality was planning to use a private operator for that equipment. Finally, the actual procurement of equipment had to follow the community's municipal charter requirements for purchasing.

Applications for the CMC community grants were taken during the summer of 1989 as part of the regular funding cycle for the SWAP program. Interest in the program was strong and the process of narrowing down the list of applicants to six communities was lengthy. Selection required consideration of three major issues:

- Was the application administratively complete - representing the ability of the applicant to commit to all CMC program requirements and follow-through on that commitment?
- Did the proposed project represent the type of model recycling and composting programs that were targeted for the CMC effort?
- Was the location, size and demographic profile of the community a good fit with others that had applied, so that a broad representation of different community types in Michigan were covered.

Out of this selection process the following six CMC communities emerged (2 in each size category - small, medium and large):

- The City of Buchanan (1990 census population of 4,992): Buchanan is a small manufacturing and agricultural community in southwestern Michigan with a public works department providing solid waste services and current membership in a regional public authority that owned its own landfill. Buchanan was providing some basic drop-off recycling services and leaf composting at the time.
- The Village of Caseville (1990 census population of 857 - with peak summer population reported at 2,810): Caseville is a small tourist and resort community on the shores of Saginaw Bay at the northern tip of Michigan's thumb, with privatized solid waste services and reliance on a privately-owned landfill. Caseville had no significant recycling and composting programs in place at the time.
- Delta Solid Waste Management Authority (DSWMA), Delta County (1990 census population of 37,780): The DSWMA consists of a set of rural communities in northern Michigan's Upper Peninsula on the shores of Lake Michigan with both public sector and private sector refuse collection services, an established non-profit based recycling effort providing county-wide drop-off recycling services, some basic leaf composting operations and a public authority that owns its own landfill.

- Isabella County (1990 census population of 54,624): Isbella County, organized in 1853 in the Lower Peninsula's mid-Michigan section and includes the larger population center of Mt. Pleasant, is characterized by privatized solid waste services, reliance on a privately-owned landfill, an established leaf composting operation and a history of publicly supported drop-off recycling efforts.

- The City of Lansing (1990 census population of 127,321): The State's Capital and its fifth largest city, Lansing is characterized by public and private sector refuse collection services, reliance on a privately-owned landfill, no significant composting operations and an established non-profit and private sector-based recycling effort providing drop-off recycling services.

- The Southeast Oakland County Resource Recovery Authority (SOCRRA) (1990 census population of 326,062): SOCRRA comprises the largest population group of all the six projects and has a long history of public sector involvement in providing recycling drop-off services, compost processing services as well as operating publicly-owned landfills, transfer stations and incinerators.

As shown on the map found on the following page, a fairly even geographic distribution of the communities across Michigan was achieved, which was considered to be important in demonstrating broad application of the CMC model community concept to all regions of the State.

PROJECT MANAGEMENT AND ORGANIZATION

Responsibility for management of all SWAP grant projects rested with the Waste Management Division of the Michigan Department of Natural Resources (MDNR). The SWAP bond financing package provided agency funds for staffing in addition to the direct grant and loan funds.

Each of the six CMC communities then appointed a designated project representative to work with MDNR staff on the project.

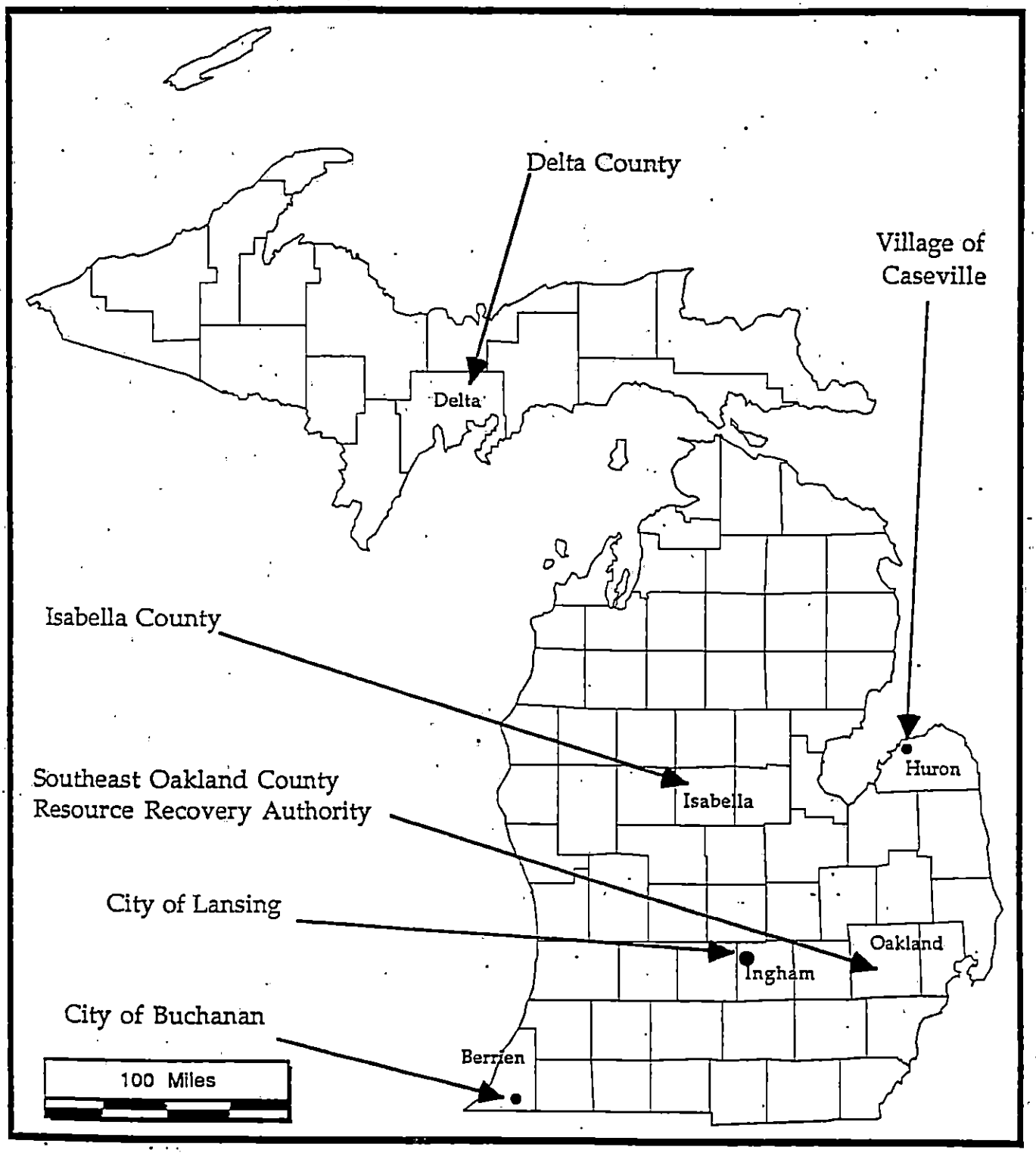
The Technical Consulting Team

One of the first assignments for MDNR staff and the CMC community representatives was to select the technical Consulting Team that would "design, develop, monitor and evaluate"[2] the CMC programs.

2 Descriptions from Michigan Department of Natural Resources Waste Management Division, Request for Proposal for Technical Consulting Services, 1990

Figure 1

Michigan CMC Communities



The legislation specified that no more than 10% of the total CMC funds would be expended for technical consulting services for the project and that the services would be provided to the communities, but be under contract to the MDNR and managed by MDNR. MDNR staff worked closely with a number of the community representatives in structuring the request for proposals (RFP) for technical consulting services and in evaluating proposals during the selection process.

The selection process resulted in the addition of the following consultant team to the project:

- Resource Integration Systems with offices in the U.S., Canada and Europe would serve as the prime contractor for the technical Consulting Team.
- Resource Recycling Systems with offices in Michigan would serve as the principal subcontractor on the technical Consulting Team.
- Fishbeck, Thompson, Carr, and Huber with offices in Michigan would provide engineering services for the larger facilities.
- Franklin Associates, Ltd. with offices in Kansas and Washington D.C. would provide services in locating markets and program database systems.

The consultants proposed a project team approach with RIS assuming the prime contractor role, RRS as the main subcontractor and the principal Michigan presence and the balance of the team serving as sub-contractors to RIS.

The Technical Work Plan

The work scope of the RFP and the work program proposed by the technical Consulting Team would provide the structure and schedule for the CMC program during the project design and construction process. The work plan was the principal responsibility of the Consulting Team, yet required full participation by both MDNR staff and the community representatives to address the complex issues associated with each project.

Phase I Implementation Planning

The technical work plan included an implementation planning phase which would culminate in production of an Implementation Plan for each community. The Implementation Plan would serve as the basis for a binding contractual commitment between the community and MDNR specifying total grant funds to be awarded to the community, the project to be constructed and implemented and all other related obligations of the community. Phase I Implementation Planning Tasks included:

- Evaluation of Existing and Proposed Community Programs

- Design of Community Recycling and Composting Collection Programs including:
  - Residential Collection Programs
  - Commercial Collection Programs
  - Identification of Target Materials
  - Recommended Equipment for Recycling and Composting Programs
  - Education and Promotion Programs
  - Estimates of Program Operating Costs
  - Evaluation of Private vs. Public Sector Operation

- Preliminary Market Investigations for materials including:
  - Old newspapers (ONP)
  - Old cardboard containers (OCC)
  - Office papers
  - Glass containers
  - Tin cans, metal
  - Scrap aluminum
  - Plastics (HDPE, PET, etc.)
  - "White goods" (appliances)
  - Used oil, and
  - Compost

- Design of Recycling and Yard Waste Processing Facilities including:
  - Site layout and traffic flow
  - Vehicle parking/storage needs
  - Material tipping and storage requirements
  - Material processing requirements
  - Shipping requirements
  - Expansion provisions for additional materials

In completing the above tasks, and developing the Implementation Plans for each CMC community, the Consulting Team and MDNR staff worked with each CMC community representative in a local program design and approval process. As outlined later in this report, this design process addressed key project design decisions such as project sizing, siting, staffing, administration and financing.

Phase II Program Implementation

The technical work plan also covered the actual project implementation phase in which final design, procurement and construction/installation/start-up would take place. These tasks would be carried out jointly by the consultant team and each community with oversight by MDNR staff to maintain adherence to the adopted Implementation Plan. Phase II Program Implementation Tasks included:

- Procurement of Equipment for Collection Systems and Processing Facilities
- Completion of Detailed Facility Engineering and Design
- Oversight of Construction and Equipment Installation
- Assistance with Education/Promotion Campaign Development
- Start-up Troubleshooting
- Ongoing Monitoring and Evaluation
- Establishment of an Information Tracking Database

Reporting and Communication

The technical work plan included the following reporting and communication requirements for the Consulting Team:

- Monthly Project Status Reports
- Community Implementation Plans
- Six-Month Project Updates
- Monthly Newsletters
- Project Overview Report

A two-year time frame was anticipated for the project. Phase I Implementation Planning would take six months while Phase II Project Implementation would take 12 to 18 months (depending on the size of the community and project), with up to 6 months of data collection expected for the community projects.

The balance of this report provides a comparative assessment of the results of the CMC project and includes:

- a summary of project results by community,
- a comparison of project results across communities covering specific measures of performance such as implementation barriers, participation rates, budgets, etc.
- identification of key success factors and an evaluation of individual project results for each community against these key success factors, and finally;
- an analysis of the applicability of the CMC project as a model, both for an individual community seeking working examples of programs to guide their own programs or for a state seeking information on effective grant based "model" program initiatives.

I: INDIVIDUAL COMMUNITY PROGRAM EVALUATION SUMMARY

Each CMC community entered the program with a general project concept, submitted with their application for the CMC grant, that guided initial assessments by the Consulting Team of material recovery program design options. During the Phase I Implementation Planning, these project concepts were refined into specific project plans that met all CMC program requirements described earlier in this report. During Phase II Project Implementation these project plans were further developed and modified where necessary as part of the design, construction and start-up process.

Following are overviews of this process for each of the six communities accompanied by a summary evaluation of the community program based on available information at the time of this report and drawing on the more detailed analysis provided in the individual community evaluation reports[3].

A: COMMUNITY PROGRAM OVERVIEWS

Each of the CMC programs is uniquely tailored to the specific needs of the individual community. This process resulted from a direct effort to build the final project design from the original project concept in their CMC SWAP grant application.

1. City of Buchanan Community Profile

The City of Buchanan applied for CMC status because they were interested in implementing a curbside commingled recycling program. Their application demonstrated an understanding of the need for a processing facility or low tech material recovery facility (MRF) of some sort. The City was a member of the Southeast Berrien County Landfill Authority and was interested in a facility which could easily be expanded to accommodate the rest of the Authority members. The preferred site for the MRF was identified as the Authority landfill about 2.5 miles from town.

a: Buchanan Grant Application and Pre-CMC Program Status

Historically the City had been one of the more innovative members of the Authority and had sponsored recycling initiatives in the community in order to investigate ways to reduce their reliance on the Authority-owned landfill. At the time of their application the City sponsored a recycling drop-off center for newspaper that was in its eighth year of operation. The City also participated in an Authority sponsored drop-off at the landfill that collected a wider variety of materials.

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3 Full evaluation reports on each of the CMC community programs are available from the Michigan Department of Natural Resources Waste Management Division

In expressing an interest in curbside recycling, the City indicated a preference to have municipal crews handle recycling collection for the residential sector. Buchanan has run their own refuse collection program with municipal crews for many years. The city also ran the drop-off mentioned above and a fall curbside leaf collection program. This reliance on municipal equipment and personnel reflects a long City tradition of directly providing services to the taxpayer. As a smaller City they have been able to utilize public works personnel to handle a variety of tasks and solid waste/recycling were considered to be a good fit with the other public works activities.

The commercial sector was serviced mainly by two private haulers, but the City did provide refuse collection service to many of the smaller businesses. The City also entered into the project with a strong positive working relationship with their business community and expected to receive a high level of cooperation during program implementation.

Buchanan had already been composting leaves using a wheel loader at a site located at the Authority landfill and expressed the intent to expand to grass and brush composting. As with recycling processing, the goal would be an Authority wide program and the use of a more specialized equipment.

Due to the large difference in population between the City and the Authority the question of MRF and compost processing sizing/flexibility became a central issue in program development. The City felt a strong allegiance to the Authority and wanted to proceed in a manner which facilitated expansion when the other Authority members were ready to follow Buchanan in implementing similar programs.

Buchanan felt that the challenge in developing recycling and composting processing capacity was to provide enough flexibility in design through selection of equipment size and type and recommended building size and type to accommodate further expansion into an Authority-wide program. This would allow other members of the Authority time to secure funding at a later date to add to the equipment base and finance expansion of the building as needed.

As envisioned by the City, their preferred program would rely on municipal crews for collection and arrange for processing in cooperation with the Southeast Berrien County Landfill Authority (who would provide land and operating staff). Buchanan's recyclables would be delivered to a MRF located at the Authority landfill. The MRF would have expansion capabilities to allow for service to the Authority's other members at a later date. Collection of Buchanan's recyclables on a commingled basis would take place much as collection of solid waste is presently handled - i.e.: public collection for the residential waste stream and some commercial, and private collection of the the remaining commercial and industrial sectors.

The project would also include expanded municipal yard waste collection, including brush, grass, and leaves. Composting would occur at the present compost site located at the Authority's landfill, utilizing a windrow turner to be purchased with CMC funds.

b: Buchanan Community Framework During CMC Plan Development

The application was submitted by the City of Buchanan alone; however, the City was requesting assistance in developing a facility that would serve all members of the Berrien County Landfill Authority. While this preferred program was consistent with the CMC program goals, the question of wider Authority uses needed to be resolved since CMC funds awarded to the City could be expended to accommodate the City's needs only.

Existing private sector firms had also indicated some interest in providing both recycling and composting collection and processing services. As required by the CMC program rules, further investigation of available or planned private sector services were investigated by the Consulting Team. Research indicated that prices being offered by a local scrap processor for recovered materials were significantly below market rates. As well, other potential service providers appeared to have no specific plans for near-term development while the City was already extensively involved in both composting and recycling. Therefore, working towards a public sector, Authority-wide focus for the project appeared to provide the greatest long-term growth and success potential for the programs.

Following is an overview of the community framework that was in-place to support development this approach to providing recycling, composting and education programs.

Institutional/Political

The City of Buchanan benefited from strong citizen and community opinion leader support for source reduction, recycling and composting efforts. The City administration further encouraged this through active involvement of a citizen's advisory committee in most if not all phases of the project development process. This further strengthened the institutional and political support for the program.

Legal

The strong institutional and political support coupled with the centralized administration enabled Buchanan to move rapidly on all legal requirements for the program. Policies, ordinances and agreements were quickly drawn up and adopted to address the yard waste disposal and burn ban, the mandatory recycling requirements and to provide for the service contract with the landfill authority for operation of the MRF.

Financing

The City had established mechanisms in place to provide for operational funding through their general fund. The City had, in fact, already been expending significant funds each year for their leaf and recycling collection programs. Adjustments in these appropriations to accommodate the expanded programs were easily handled in the annual budgeting cycle once administration anticipated the likely changes that were required in funding.

c. Buchanan CMC Implementation Plan Recommendations

Following are details of the recommended program that resulted from this Phase I Implementation Planning Process. The recommended program would handle an estimated 1,300 tons of recyclable and compostable material per year :

Recycling Collection and Processing

Recyclables collection would be performed by the City of Buchanan Public Works Department. The following design features would be implemented:

- Weekly curbside collection of old newspaper (ONP), glass, steel cans, aluminum cans, polyethylene terephthalate (PET) and high-density polyethylene (HDPE) bottles for all residential structures with 1 to 4 units supported by passage of the mandatory participation ordinance.

- Weekly centralized collection at curb-cart depots of the same materials for all multi-family buildings with 5 or more units.

- Weekly curbside collection of corrugated cardboard (OCC), glass, steel cans, aluminum cans, PET and HDPE bottles for approximately 100 commercial entities identified as generating large quantities of these materials.

- Materials segregated at the truck and delivered to the Buchanan Material Recovery Facility (MRF) located at the Berrien County landfill site.

- In addition to the mandatory participation requirements placed on residents, the City will pass an ordinance which requires commercial generators of corrugated cardboard to source separate and recycle.

Processing would occur at the Southeast Berrien County Landfill site as per a long-term leasing agreement between the Landfill Authority and the City of Buchanan. The processing building would be attached to a large existing building to be used to store baled materials.

A new 6,000 square foot fabricated steel building with a 24-foot ceiling would be built. The building would have three on-grade 22 ft high overhead doors and two loading dock doors. The MRF would receive and process materials that were already segregated into five separate streams. Glass would be delivered color sorted (3 streams) and would require no further processing. Steel cans would need to be magnetically separated from the aluminum and HDPE, and then the aluminum size-screened from the HDPE. Because the amount of PET collected and processed was expected to be relatively small, this material would be manually separated from the HDPE.

The ONP, OCC, metal cans and plastics would be baled in a horizontal ram manual tie baler. While quality control should occur primarily during collection, a sorting door was included at the start of the incline of the baler feed conveyor. This door would allow for efficient manual sorting of Buchanan's small quantities without the expense or space requirement of an elevated sorting platform.

Yard Waste Collection and Processing

Buchanan's compost program would include curbside collection, drop-off service and backyard composting systems. Curbside services would include a continuation of the City's bulk leaf fall collection and an expansion of the on-call curbside brush chipping and collection service. Grass collection would be provided but de-emphasized in order to encourage more yard waste reduction activity.

Non-residential generators (landscapers, businesses, municipal crews) would dispose of yard waste using the drop-off services at the compost processing center. Most brush would be collected and chipped at curbside but could also be dropped off at the compost site. The yard waste disposal and burn bans are expected to increase citizen and business participation in all the yard waste collection and reduction programs.

Composting would continue at the Southeast Berrien County Landfill site as per a long-term leasing agreement between the Landfill Authority and Buchanan. The site would need to be upgraded to properly handle all yard waste from Buchanan.

Yard Waste Reduction

While grass clipping collection service would be provided, the program would be de-emphasized. The City would instead emphasize an aggressive yard waste reduction program, encouraging techniques such as frequent mowing and mulching. Households that dispose of grass clippings through curbside service would be required to place the material in durable containers or 30-gallon kraft bags.

Backyard composting programs for food and yard waste would include the distribution of special backyard composting units and mulching mower conversion kits and would to be promoted in concert with the yard waste reduction program.

Education/Information/Promotion and Solid Waste Reduction

Like the other CMC programs, promotion and education efforts would target several critical needs, beginning with achieving maximum participation in yard waste reduction and collection programs and recycling collection programs, as well as meeting the targeted material diversion tonnage goals for each community. This was believed to require basic education efforts on how to use the program as well as promotional efforts that would encourage increased participation in the programs. Ultimately, an ongoing and pervasive public communications campaign would serve to change the solid waste disposal habits of Buchanan's citizens and businesses to encourage reduction in solid waste generation.

A four-part promotion and education plan was developed for each community including:

- Curbside and general recycling promotion and education
- Yard waste reduction/collection promotion
- Multi-family/commercial/drop-off promotion
- Ongoing education and information, including waste prevention

This campaign would rely on individual community resources (staff expertise, municipal newsletters/mailings, operating budgets) as well as generic CMC educational and promotional materials. The generic materials would be developed for residential curbside, multi-family and commercial recyclables collection; yard waste collection and reduction and waste reduction and would be individualized by each community for use in their program. This development of generic materials would streamline the time required for education and promotion efforts for all CMC communities.

2. Village of Caseville Community Profile

The Village of Caseville applied for CMC status because they were interested in a simple system, preferably curbside, for the collection of recyclables. They envisioned a source separation system which would not require subsequent sorting - based on their assessment that they could not afford the operating costs of a sorting facility.

The Village had a lot of summer residents who were required to pay the Village for the mandatory solid waste pickup on a year around basis. Village decision makers believed that the curbside service would need to be extended to these residents as well in order to provide equitable levels of service to all households, whether permanent or seasonal. Additionally 1 to 3 drop off sites near parks and downtown would be desirable. While residential and some commercial refuse collection services were provided by the private sector through contract to the Village, municipal operation of the recycling program was being anticipated.

For composting the Village requested some type of pickup equipment as well as equipment to facilitate processing. No site for compost processing was identified.

a: Caseville Grant Application and Pre-CMC Program Status

There was considerable interest in receiving the CMC grants within the community despite the fact that Caseville did not have any existing recycling programs in operation or any composting efforts underway. The community's small size, seasonal tourist population and relative isolation from markets were considered to be barriers to implementation of these types of programs.

Because interest was so high, a number of different ideas and concepts were put forth by various parties within the Village which generated considerable controversy and discussion For example some thought that the Village should also do refuse collection with municipal crews and then combine the recycling pickup with the refuse pickup. Another item mentioned was the interest in obtaining a paper shredder and hay baler to make animal bedding to sell to area farmers. As well, there was discussion of the potential for their recycling program to eventually service the surrounding rural and semi-rural areas.

Many of these ideas represented a major shift for the Village away from private contracting for services to municipal provision of these services. The village had for several years contracted for collection of solid waste and their hauler had supposedly informed them that rates for solid waste collection would not drop if they instituted a recycling program. There was no one nearby that was in the recycling business, although Waste Management, Inc. (WMI) did pick up solid waste from two State Parks nearby.

b: Caseville Community Framework During CMC Plan Development

The range of options under discussion were basically a response to the small size of the Village and its relative isolation - two facts that represented the major challenge in program design for the Consulting Team. The utilization levels of any equipment would be relatively low (less than 15% in some cases), since options to increase utilization through cooperative efforts with neighboring communities would not provide significant additional tonnage. This presented design challenges in both collection and processing for compost and recyclables, and resulted in exploration of a variety of ways to minimize capital expenditures through hauling of material to distant processing centers and through exploration of land application approaches to yard waste processing.

During the course of the CMC program planning period WMI began indicating their interest in supplying recycling services to the Village. As required by the CMC program rules, further details on available or planned private sector services were investigated by the Consulting Team. Meetings and phone conferences between the Consulting Team and WMI officials indicated that program details were still being developed and no price information was offered.

Village officials, however, continued their strong interest in running the recycling/composting program on their own or in having more control over the system through contract, and in bundling recycling collection with refuse collection. Final implementation eventually resulted in a private sector contract for collection and processing of yard waste and recyclables using a small local firm, Green, Inc., operating Village-owned and CMC-funded equipment. The decision to contract with the private sector did not develop until later in program planning, but eventually was believed to be most consistent with past practices and the limited capabilities of existing village staffing levels.

When all the risks and benefits were evaluated the bottom line for the Village was their need to select and own the required equipment which would provide them with greater control over the program's future. The alternative of private sector equipment ownership with operation thru a contract would leave the Village with few options should the service not be acceptable, since no other vendor with the required recycling equipment would be available to bid on contracts.

The approach recommended can provide a working model of what a small isolated community can do to build an effective recovery program. Village personnel have already shown a strong interest in expanding the program beyond the original scope. These developments would not be as likely under a full private contracting scenario where incentives to recycle are more limited due to the already noted geographic isolation and relative weakness of recycling markets. This capability to expand and reach greater diversion levels represents the major advantage of the approach being followed.

Following is an overview of the community framework that was in-place to support development of recycling, composting and education programs.

Institutional/Political

The Village of Caseville's approach to management of solid waste and recyclables was administratively and politically in transition during the period of CMC program planning. Because of historic reliance on contracting out refuse service the Village did not have in place any internal expertise in program design and development issues. Thus program development required significant attention to institutional issues as well as specific methodology decisions regarding program design such as truck selection, etc.. Administrative structures for staffing, rate setting and fee collection needed to be established in order to proceed with program implementation.

The Village relied heavily on its citizen recycling committee not just for input into program decisions, but also for assistance with such tasks as facility siting and design. The citizens recycling committee, made up of representatives of both staff, elected officials and interested community members, is still actively involved in monitoring and assisting with program implementation. Many other aspects of the institutional systems, such as the record-keeping and accounting mechanisms, were more easily integrated into Village operations by staff whose responsibilities covered these areas.

Legal

The business management staff were able to move forward on most aspects of the legal structure required for the program, which were minimal compared to the other communities which either had greater layers of government decision making or multiple governments to negotiate with. Policies and ordinances were quickly drawn up and adopted to address the yard waste disposal and burn ban and the mandatory recycling requirements.

Financing

The Village already had some mechanisms in place to generate a portion of the required operating funds through its established annual budgeting system. As well, the Village staff and the citizen's committee were committed to a volume-based fee system to cover program expenses.

c. Caseville CMC Implementation Plan Recommendations

Details of the recommended program that resulted from this Phase I Implementation and Planning process, which would handle an estimated 425 tons of recyclable and compostable material per year, are as follows:

Recycling Collection and Processing

Recyclables collection would be performed by the Caseville Public Works Department (eventually changed to a private contractor operating village-owned equipment). The following design features would be implemented:

- Weekly curbside collection of ONP, glass containers, steel cans, and HDPE bottles for all residential structures with 1 to 4 units, including mobile homes (which are more predominant here than in other CMC communities);
- Weekly centralized collection of the same materials for all multi-unit buildings of 5 or more units;
- Weekly curbside collection of glass, steel cans, and HDPE bottles for bars, restaurants and all other industrial, commercial and institutional (ICI) establishments in the Village which receive municipal refuse collection;
- Materials are to be segregated at the collection truck and delivered to the Caseville Recycling Depot located at the Public Works Yard;
- Commercial establishments would be required to deliver their OCC to the Recycling Depot;
- Collection depots would be set up at the public marina and County Park to capture recyclables.

A recycling depot/processing building would be built at the Public Works Yard. The new 3,000 square foot fabricated steel building would have a 20-foot ceiling and two on-grade 16 ft high overhead doors. Newspaper, plastic and cardboard would be dumped separately in the building on the floor. Glass would be dumped directly into roll-off containers located outside the building. Metal cans would be dumped loose into a wire cage and stored outside the building. The cardboard, newspaper and plastic would be baled in a vertical baler. Baled materials would then be stored in the building.

Yard Waste Collection and Processing

The composting program outlined for the Village of Caseville called for the establishment of three types of collections: 1) bulk leaf collection in the fall and spring using a leaf loader and dump truck, 2) yard waste drop-off services at a designated location such as the public works yard, 3) on-call brush chipping services.

A land application approach to processing of yard waste was recommended as a technically acceptable and less expensive alternative to windrow composting. Engineering calculations determined that approximately four acres of land would be required to spread the Village's uncomposted leaves and grass directly on cropland at agronomic rates determined to be acceptable according to state guidelines for sludge application (the closest applicable guidelines).

Bulk leaves would be delivered to the land application site in 8-cubic yard truckloads and deposited at a designated area. It would be the responsibility of the farmer to spread the leaves and grass over the field at agronomic rates and then turn the soil using appropriate farm equipment (disc or plow). Brush would not be land applied and instead would be shredded and then reused as mulch by residents and the Village DPW.

Yard waste could be dropped off at the collection site (eventually identified as the recycling facility) during hours supervised by a site attendant, at least two half-days per week. Material collected through the drop-off program would be transported to the land application site at the end of each drop-off collection day.

Yard Waste Reduction

Selected households would receive backyard composting units for handling some yard waste and kitchen scraps. This program would also involve education and promotion efforts encouraging practices such as leaving grass clippings on the lawn and backyard composting techniques.

Education/Information/Promotion and Solid Waste Reduction

Like Buchanan's program, promotion and education efforts would target several critical needs, beginning with achieving maximum participation in yard waste and recycling collection programs, as well as meeting the targeted material diversion tonnage goals.

A four-part promotion and education plan was developed for each community as described on page 15.

3. Delta Solid Waste Management Authority Community Profile

The Delta Solid Waste Management Authority (DSWMA) is comprised of all 14 local units of government within Delta County including the cities of Gladstone and Escanaba. DSWMA was not involved in collection or processing of waste except for baling mixed waste to be landfilled. The Authority operated the baler and landfill. They did not want to get involved in collection. They did want to become a regional processing facility for recyclables, but would contract out operation of the MRF.

a: DSWMA Grant Application and Pre-CMC Program Status

Delta County already had in place good quality programs to collect recyclables thanks to the efforts of Lakestates Industries. Lakestates Industries was a non-profit sheltered workshop providing rehabilitative employment opportunities for the handicapped. Lakestates Industries operated 17 recycling drop-off sites, transporting ONP, glass, tin, aluminum and HDPE milk jugs to a processing site they also operated where some OCC was also baled. They had space, some buildings and equipment to process recyclables. They were instrumental in assisting the Authority with seeking the CMC grant and in planning the actual program to be implemented. The grant application proposed that a depot program with all processing developed through an expansion of existing Lakestates Industries programs.

In submitting the application, DSWMA was presenting a proposal for all of its member communities and committing to implement the comprehensive CMC program across all those communities, even those which had not expressly documented their support for the program. Other than Lakestates Industries, strong support for the program resided primarily in the two largest cities, the largest hauler, and the regional planning agency, the Central Upper Peninsula Planning and Development Regional Commission (CUPPAD).

The Cities of Escanaba and Gladstone both provided municipal collection of refuse. There were three private haulers operating in the Delta County area. Escanaba Pickup Services (EPS) was the major commercial and out-county residential hauler while the others were minor haulers. EPS maintained an interest in the CMC project and had attended CMC meetings. EPS had few concerns with plans for Escanaba and Gladstone to handle their own collection services since its own customer base was largely in the out-county area and in the commercial sector.

As part of the strategy proposed for their grant application Lakestates Industries wanted to sell their buildings and equipment to the DSWMA and then contract to operate a MRF to be developed using those buildings and equipment as a base. DSWMA was not opposed to this arrangement but wanted to see a cost comparison with building a new MRF at the landfill site. In either situation Lakestates Industries wanted the opportunity to operate the MRF but the landfill site would be much less convenient for them in terms of employee logistics, disposition of existing buildings, etc..

Both Escanaba and Gladstone had composting programs with each city providing leaf collection in the fall and composting of leaves on their own property. Escanaba operated a drop-off site located about a half-mile from the Lakestates Industries MRF site. The two cities indicated that they wanted to continue to operate their compost sites as part of the expanded CMC program.

b: DSWMA Community Framework During CMC Plan Development

The CMC implementation planning process needed to address four key issues in the County.

1) Utilize Lakestates Industries facility or build new at landfill?

2) What is future role of Lakestates Industries?

3) How would collection be accomplished?

4) Go with existing compost programs or combine?

Much of the design process revolved around the institutional issues associated with these four questions. Lakestates Industries, for example, had significant existing resources, a good site, expertise, strong local reputation, and the high visibility resulting from employment of nearly 25 mentally handicapped workers. Similarly, the larger communities had in-place capabilities to manage, set up staffing and procure equipment for collection and processing programs for both yard waste and recyclables.

To address the first two key issues cost estimates were developed by the Consulting Team for a scenario in which all city and depot collected recyclables would be processed at a MRF located at the landfill and operated by a third party contractor. Those costs proved to be considerably higher than the plan to work with Lakestates Industries and their existing buildings and equipment.

Delta County's remote Upper Peninsula location and rural county-wide project scope presented more difficult challenges that resulted in a long iterative process to decide on the most appropriate recycling collection strategy for out-county residents and how the Authority and the out-county communities would be able to financially support those programs.

The constraints of the Authority structure were stretched in addressing these last points. Equipment choices, public/private roles, and viable funding mechanisms all required attention by the Authority itself and by its individual members. This process was lengthy - proceeding well past the time period during which the Implementation Plan was finalized.

The result was that the original recyclable collection recommendations were changed significantly twice to address issues associated with cost and equipment trade-offs. The first occurred after the initial "final" draft of the Implementation Plan was released and resulted in abandoning the drop-off approach due to difficult funding logistics with the out-county communities in favor of an innovative curbside program county-wide, even in low density areas. The second occurred after the Implementation Plan was actually adopted and the agreement between MDNR and DSWMA signed and resulted in moving to same truck collection for both recyclables and solid waste in the two cities. Both approaches relied on new truck technology allowing simultaneous collection of trash and recyclables representing one of the more innovative aspects of the entire CMC program.

Following is an overview of the community framework that was in-place to support development of recycling, composting and education programs for the DSWMA and its member communities.

Institutional/Political

The DSWMA had been established as an authority for the purpose of financing, constructing and operating a regional landfill. The DSWMA controlled all of the solid waste flow within its members boundaries and served as the legal representative for the municipalities on all solid waste disposal matters. This resulted in a reasonably effective communication and decision making structure despite the fact that the program would impact the jurisdictions of 14 different communities. This existing structure provided an important focus to all institutional, political and administrative issues that developed during system design and implementation. Yet the DSWMA still was challenged, it did not have any full-time staff and since the scope of the proposed recycling and composting programs was so much broader than the traditional DSWMA role in landfill management.

Legal

The authority structure and its control of the landfill were instrumental in addressing many of the policy, ordinance and agreement requirements of the program. For example, in order to meet the mandatory participation requirements without having each local unit pass an ordinance, the DSWMA has established a policy "that when the DSWMA processing center is fully operational no person, organization or business may dispose of the following recyclable materials: used newspapers, PET and HDPE plastic containers, aluminum cans, glass containers, steel cans and magazines at the Delta Landfill." As a result of this policy, the waste generator would be responsible for separating recyclables out of the waste stream and making arrangements for its proper disposal - essentially accomplishing the same objective as a mandatory recycling ordinance, despite the fact that policies are a weaker instrument for implementation due to less effective enforcement mechanisms.

Similar actions helped the County respond to the yard waste disposal and burn ban as well as the contractual demands of the MRF arrangement and additional drop-off services.

Financing

The Authority's ability to work with different funding mechanisms, though, was more limited. The authority does control the landfill and can use funds from tip fees to cover certain program costs such as county-wide education. It is limited, however, in how the day to day operational costs for recyclables and yard waste collection and processing can be handled. This required the program to rely on the actual service providers to handle program funding arrangements. In the rural areas, for example, funding for the larger drop-off network was beyond the means of the authority. This resulted in abandoning the drop-off approach and relying on a private hauler to provide curbside recycling services and cover costs through their subscription fees. Similarly, programs offered by the Cities of Escanaba and Gladstone had to develop their own general fund appropriations to cover collection program costs.

c. DSWMA CMC Implementation Plan Recommendations

Following are details of the recommended program that resulted from this Phase I Implementation Planning Process. The recommended program would handle an estimated 7,250 tons of recyclable and compostable material per year:

Recycling Collection and Processing

Escanaba and Gladstone would operate municipal recycling programs with the following components:

- Weekly municipal curbside collection of ONP, OCC, steel cans, aluminum cans, glass containers, and HDPE and PET plastic bottles for all residential structures with 1 to 4 units;
- Weekly centralized collection for all multi-unit buildings (5 or more units) receiving municipal refuse collection, and;
- Weekly collection of container materials (steel cans, aluminum cans, glass containers, and HDPE and PET plastic bottles) from bars, restaurants and other commercial establishments receiving municipal refuse collection in Escanaba and Gladstone.

These collection programs were intended to be serviced with specialized one-person recycling vehicles. As stated earlier, this adopted component of the Implementation Plan was later changed in favor of a program using the divided compartment co-collection vehicles (for both refuse and recyclables).

Persons in the out-county area would either be serviced by their private waste hauler with curbside collection of recyclables or bring their recyclable materials to a drop site. Drop sites would be provided at the processing center in Escanaba and at the Big Bay de Noc Transfer Station near Garden Corners and would accept the same materials as collected in the curbside program.

In the out-county area, an estimated 67% of the residents would be serviced with curbside collection of recyclables based on the size of the projected customer base of the Escanaba Pick-Up Service (EPS), the major out-county hauler. By working with the Authority on the CMC project, EPS decided to purchase a co-collection vehicle and lease another from the Authority (purchased in part with CMC funds) to pick up refuse and recyclables on the same truck. With the landfill ban policy, the other remaining haulers would have to find some way to provide recycling services to their customers as well - effectively resulting in recycling opportunities being available to all residents except those that use the Big Bay de Noc Transfer Station.

Co-collection of recyclables and solid waste, in a divided compartment co-collection vehicle, represented a major innovation for the CMC program in the way recyclables are collected. The specialized vehicles, one design with a real loaded packer body divided into three different compartments and the other with a side loading system, were new in the marketplace with only a few trucks in actual service. The divided compartment co-collection approach allowed DSWMA to arrange for convenient curbside recycling service in low density rural areas costs covered by the subscription fees paid by the residential customers to their hauler. DSWMA could then minimize the need for an extensive drop-off system (which had been part of the original "final" draft of the Implementation Plan) and a more complex funding mechanism.

The co-collection approach was first suggested by DSWMA and the local haulers for the above reasons and in anticipation of cost savings through use of a single-pass rather than double-pass approach. Evaluations of the proposed truck by both the consultant team and DSWMA established that such an approach could work despite the limited track record for the equipment. The truck as designed accepts solid waste in the largest compartment with fibers and plastic/metal containers placed in the other two. The truck would be retrofitted with additional containers for glass and curbsorting used to separate materials in the form needed for the Lakestates Industries MRF. Materials would be set out in an 18 gallon container inserted into 90 gallon carts to be provided to each customer.

Note that after the CMC Implementation Plan was finalized, co-collection captured the interest of DSWMA representatives from the two largest cities. Eventually all recycling collection programs in the DSWMA CMC project would use either one or the other of these divided compartment co-collection vehicles - representing both a major innovation as well as a significant deviation from the original Implementation Plan which included the use of specialized recycling vehicles in both Gladstone and Escanaba.

These developments allowed the scaling back of both the existing Lakestates Industries drop-off program as well as its planned continuation as part of the CMC program. The final drop-off system would consist of a drive-through at the DSWMA MRF and a second small drop-off at the Big Bay de Noc Transfer Station.

It was planned that DSWMA would also provide for an OCC collection service to small commercial generators within Delta County in addition to their planned collection of container materials from bars and restaurants. The collection of OCC would be from small businesses that are typically not provided recycling services by private waste haulers due to the small quantity of OCC generated at each individual establishment. The collection system was to be provided by a private entity, under contract with the DSWMA. Later, after MRF construction, this portion of the program was dropped for two reasons. First, the existing private haulers indicated that they could expand their collection services to the small generators without CMC support (except for the expansion of MRF capabilities and the assistance to EPS for purchase of the co-collection trucks). Second, the municipal programs shifted to co-collection trucks as well and were able to separately load most OCC into the recycled fiber bins on their commercial routes. Some businesses also elected to self-haul OCC to the MRF.

After determining that Lakestates Industries site was the most suitable location for the MRF the DSWMA solicited requests for proposals from companies and agencies interested in operating the MRF. The only respondent was Lakestates Industries Inc., who was subsequently selected by DSWMA as the MRF operator.

All three existing structures on the Lakestates Industries recycling facility site would be utilized. In the original set of planned modifications, glass would be processed and stored in an existing 4,500 sq. ft. building that would have a new roof shed of 600 sq. ft. attached to allow receiving and storage of glass. Another 6,000 sq. ft. building would house the baler and process ONP, OCC, aluminum, plastic and steel cans after new doors were added to allow the collection vehicles to unload in the building. The third building, 5,000 sq. ft. in size, would be used to store baled materials after two open sides and a loading dock were enclosed.

ONP and commercial OCC would be dumped separately in the baler building on the floor on either side of the baler feed conveyor. Magazines would be delivered in gaylord boxes or stacked on pallets at the loading dock. Cans and plastics would be dumped commingled on the floor in front of the container sort line. Glass would be dumped by color in the separate receiving shed.

As originally planned, cans and plastics would be sorted manually. The ONP, OCC, aluminum, steel and plastics would be baled. These materials would be hand picked for contaminants as they are pushed into the sort line conveyor. The sorted materials are placed in gaylord boxes or large canvas bags and dumped onto the baler feed conveyor. The facility would also handle over-run and post-consumer magazines which would be baled for delivery to the Manistique Paper mill whose location near Escanaba made collection of this material possible. (Manistique Paper is located approximately 60 miles east of Escanaba.) The glass would be manually inspected and then loaded into glass crusher feed hoppers to be size reduced and loaded into gaylord boxes or large shipping bags. The facility would also continue to handle bottle deposit system glass and PET from distributors. Baled materials would be stored in the existing southeast structure.

Yard Waste Collection and Processing

The composting system proposed for Delta County built upon existing collection programs. Fall leaf collections in Escanaba and bagged yard waste collection in Gladstone would continue. Note that Gladstone would eventually decide to eliminate bagged collection after a reallocation of CMC funds to allow purchase of a leaf loader. Both Escanaba and Gladstone would also continue to provide on-call brush collections.

No additional curbside collections are were proposed. The emphasis would instead focus on an aggressive education program to encourage yard waste reduction and backyard composting. Yard waste drop-off services would be available at the Gladstone composting site for Gladstone and out-county residents. Escanaba would continue with its existing yard waste drop-off site. Businesses and institutions would use these drop-off facilities as well.

Composting would continue at the existing sites in Escanaba and Gladstone. These cities would own the land and CMC funds would be used to upgrade the sites. Original implementation plans called for purchase of a tub grinder and partial payment on a compost screener.

Bulk leaves, bagged grass, woodchips, and brush would be delivered to the sites by curbside collection crews and city residents. Brush and wood waste would be dropped at the sites by Escanaba and Gladstone residents who choose to self-haul brush rather than call for curbside chipping services. Out-county residents could haul yard wastes to the Gladstone site only. The yard waste disposal and burn bans were expected to increase citizen and business participation in all the yard waste collection and reduction programs.

At both sites, incoming material would be piled into windrows using a loader and turned regularly with a self-powered windrow turner which Escanaba developed by modifying a runway sweeper. Gladstone was planning to do the same. Windrows would be combined as volume reduction occurs.

In the original Implementation Plan a tub grinder would be used to process the seasonally large volumes of brush which would be piled at both drop-off sites and could not be effectively hand-fed through a chipper. The eventual arrangements for ownership and use of tub grinders was to change significantly from this original plan, as described in later sections of this report. Escanaba, for example, eventually decided to feed all their material (leaves, grass and brush) through their tub grinder.

Yard Waste Reduction

Workshops on backyard composting would be scheduled during the spring through fall. Citizens who wish to receive a backyard composting unit would be able to attend one of these workshops (see Education/Promotion section). A limited number of bins would be made available of a first-come first-serve basis (total planned purchase of 950 bins included in CMC budget). When the supply of bins ran out, the Authority planned on exploring other options for sourcing bins such as encouraging boy scouts to build home-made units.

Education/Information/Promotion and Solid Waste Reduction

Like the Caseville and Buchanan programs, promotion and education efforts would focus on achieving maximum participation in yard waste and recycling collection programs, as well as meeting the targeted material diversion tonnage goals. See Page 15 for a description of the education campaign planned for each community.

4. Isabella County Community Profile

Like the other medium sized CMC project, Delta County, the Isabella County project covered a number of municipalities under a larger regional organization - in this case the County Board of Public Works structure. In Isabella County 's CMC project the City of Mt. Pleasant played a key role since it made up such a large percentage of the total County population. The active participation of Central Michigan University, located in the City, helped strengthen the project as well.

a: Isabella Grant Application and Pre-CMC Program Status

The County, City and University were motivated by increased solid waste management costs due to the shut down of the County landfill leading to long hauls to distant disposal sites. As a result, recycling and composting programs were already underway.

The City operated a compost site where it windrowed material from its fall leaf collection. The City and County also split the cost of co-sponsoring a multi-material recycling drop-off and small processing operation. A County recycling coordinator (a contracted position) and a site supervisor worked with mentally disabled individuals, inmate labor and some volunteer helpers to collect a wide variety of materials (ONP, office grades, OCC, HDPE containers, boxboard, and LDPE film) and prepare them (primarily baling) for direct shipment to markets. In addition to receiving material at the main site within the City, this team used a trailer with gaylord boxes as a mobile drop-off center at six other locations in the County. The same trailer was used to collect some recyclables, primarily OCC, from area businesses. The university also had already instituted a collection program for OCC and office paper. As well, some volunteer curbside recycling had been initiated in the Village of Shepherd in 1990 through the local girl scout program.

The County and City were more prepared than most of the other CMC communities to establish a comprehensive scope for their project. This resulted primarily from state-funded procurement assistance provided during the two previous years under a Michigan Department of Commerce (Commerce) grant program. With the Commerce grants, feasibility studies and preliminary steps in procurement had already been completed with grant-funded consultant expertise. For the County and City, the CMC capital grant was viewed as an attractive alternative to conventional bond financing for capital costs and as a source of expertise to further develop their project concept into final project designs.

This preliminary work allowed the following conceptual plans to be developed prior to the award of the CMC grant.

- Curbside Recycling: Residential curbside recycling program were believed to be appropriate for Mt Pleasant, parts of Union Township and possibly the Village of Shepherd. There was no interest by Mt. Pleasant or the County in operating this program with municipal crews. It was anticipated that contracts with local private haulers would be established. The local bias was toward two-stream commingled collections (paper and containers) on a weekly basis.

- Multi-Family Recycling Collections: Recycling collection program for apartment complexes was anticipated (located almost exclusively in Mt Pleasant, parts of Union Township and the Village of Shepherd).

- Drop-off Recycling: The County anticipated converting four to six of their existing mobile drop-off recycling sites into permanent drop-off recycling sites serviced by a private contractor, even though the existing program was County-run.

- Commercial Collections: Commercial/industrial recycling collections would include source separated collections of office paper and OCC and revising refuse collection routes to maximize the number of "sortable loads" of mixed waste that could be handled at the MRF. Expanded commercial/industrial material recovery collection would be operated primarily by a private contractor(s).

- Processing: Highest priority to the County was establishment of a MRF. The County identified a set of key design issues that they hoped to resolve as part of the CMC project.

- Curbside Yard Waste Collection: Mt. Pleasant planned on continued development of a bag and tag based collection system for yard waste.

- Other Yard Waste Collections: With a ban on burning in the rural areas the County expected that alternate methods of handling this material would need to be addressed by the Project (e.g. on-site composting, drop off locations, satellite composting centers, equipment sharing, etc.) - including promoting backyard composting and yard waste suppression methods County-wide.

- Yard Waste Processing: Mt. Pleasant was committed to continued use of the existing compost processing site and their current windrowing equipment.

b: Isabella Community Framework During CMC Plan Development

These preliminary project concepts helped the County and City develop a consensus around project goals and the need for grant funding after assessment of the resources each party was able to bring to the project, as listed below:

- The City owned a Wildcat windrow turner and tractor purchased with Michigan Department of Commerce grant monies. Mt. Pleasant already provided curbside collection of yard waste using a "pay-per-bag" program. They had established a mandatory ordinance restricting the disposal of yard waste as refuse.

- The County has evaluated a number of sites throughout the region for their MRF, had purchased an option on a site, conducted environmental testing and had made plans to share site purchase costs with the City.

- The County was preparing to sell bonds to fund landfill clean up and transfer station capital expenses (which they hoped would be constructed as part of the MRF). Along with this they were prepared to include any additional capital expenses that were outside the capabilities of the CMC grant that would be required to implement their recycling and composting programs.

- Having operated a recycling program since 1987, the County had established arrangements for marketing their materials with the assistance of their contracted recycling coordinator.

In addition to this established base to support implementation of the recycling, composting and education programs, the following legal, financial and institutional/political community framework was either in-place or under development .

Institutional/Political

Both Isabella County and the City of Mt. Pleasant as well as Central Michigan University had significant staff resources targeted at public works and recycling issues. The County had their contracted recycling coordinator and all three entities had staff engineers. These staff resources helped guarantee the ability to respond to the CMC project design and implementation challenges.

As mentioned earlier, the County was relying on its Board of Public Works (BPW) structure as the organizational mechanism for the project and had chosen not to pursue an authority structure (of the type used by Delta County to develop their landfill). The BPW approach provided for bond finance capability that had been used for their landfill operations. For CMC program design and implementation, however, the BPW structure needed to be shored up to improve decision making capability, provide for adoption of necessary regulatory and policy measures and introduce some administrative mechanism to allow consideration of the City of Mt. Pleasant in decisions.

One of the most significant steps taken to increase this capability was the creation of a MRF Governing Board whose original mission was the development of the MRF itself, but whose long-term mission has become overall program management. This Board, with appointed representation of administrative and elected officials from the City and County as well as staff from the University, was established through an intergovernmental agreement and was instrumental in guiding most important implementation decisions and in supporting adoption of needed regulations and policies. The MRF Governing Board also oversees development of annual program budgets and cost allocation mechanisms.

A major challenge for the County's program and the MRF Governing Board became the question of how to best work with the private solid waste industry that serviced the area.

Waste Management, Inc. (WMI) had recently purchased the largest waste hauler in the County, Lake Disposal, and the closest available disposal site, a transfer station in Alma (located in Gratiot County, south of Isabella). They were also in the process of siting a landfill in the County immediately north of Isabella, Clare County (subsequently approved). WMI indicated that they planned to present an unsolicited proposal for curbside recycling services to Mt. Pleasant and that they did not not want to see the County develop their own transfer station because they wanted to protect current investments and did not want to have flow controls imposed on their operations.

County staff indicated that WMI, in their unsolicited proposal, tried to make the case that the recommended MRF was not needed - instead pushing the position that the WMI transfer facilities in Alma and Clare could provide all the required services. City and County officials were concerned about a monopoly by WMI with regard to disposal and collection options available in the community.

The County was not convinced that WMI had the best interests of the County in mind, and a consensus emerged that the County would be best served by a joint public/private approach to ownership and operation of the MRF. WMI's role could develop into that of a contracted operator to a publicly-owned facility, if they were able to submit the most favorable bid. Private operators soon became aware of this preferred relationship and made plans to respond to requests for proposals as they were released. The recommended program followed this basic direction and would eventually rely extensively on the private sector to operate the program.

Legal

Meeting CMC Ordinance/Policy Requirements was another significant area where capabilities needed to be added. Despite the significant amount of preparatory work through the Commerce Procurement Grant, Isabella County had not yet implemented certain CMC program eligibility requirements, as follows:

1) Mandatory Recycling: County had hoped to meet this CMC community requirement by establishing hauler licensing procedures and incentives for establishing mandatory recycling ordinances at the local level. However this did not appear to respond fully to the CMC eligibility requirements. A subsequent strategy was developed to establish a County-level mandatory recycling ordinance, based on requirements imposed on "any" facility that would serve the County's solid waste or recycling needs . This approach was unique to the County and had not been used previously in any county-wide application in Michigan.

2) Yard Waste Disposal and Burn Burn: Since burn bans are already established in Mt. Pleasant and the Village of Shepherd, the County had hoped they could require burn permits in the rural areas or just omit them from the regulation - again a strategy that was not fully responsive to CMC requirements. A county-level yard waste disposal and burn ban ordinance applied to leaves and grass clippings was thought to be a fall-back position, although it, as well, did not have an established precedent in Michigan.

While the Delta Authority was able to use policies and contracts to address these two issues, the limitations of the Isabella County BPW structure and the lack of an in-county landfill provided no means to implement similar policy actions. Thus Isabella County was forced to rely on county-wide ordinances. The county ordinance approach has its limitations since legal authority for county ordinances is defined primarily in terms of health and safety, which limits their regulatory scope. However, the county solid waste management planning process (as required under P.A 641 of 1978) vests a county with additional responsibility which some have interpreted as establishing a basis for increasing the scope of such ordinances. Ordinances adopted by the County attempt to address these restrictions while still responding to the CMC requirements identified above.

Financing

As described earlier, the County wanted to develop the MRF and a transfer station in the same building and, if possible, on the same timeline. They wanted to supplement the CMC Project Team engineering work and MRF capital funds with their own funds for transfer station design and construction. Some remaining financial support from the Commerce grant was still available as well.

As the CMC-funded project gained momentum, though, the transfer station component was abandoned due to the administrative hurdles for bond financing and permitting of the transfer station component. Providing for future expansion of the MRF to add transfer station capabilities, if needed, was thought to be a more practical approach.

If it had been constructed, the transfer station would have provided an important mechanism for funding recycling operations through a solid waste surcharge applied to each ton of refuse delivered to the facility. Without this option the major users of the facility (County, City of Mt. Pleasant, Central Michigan University and the private sector) had to work out a complex formula for allocating additional capital costs and the ongoing operating costs of the different services that were being put in place. This, in fact, became one of the driving forces behind creation of the MRF Governing Board as a mechanism to set policies, recommend budgets to the Isabella County Board of Commissioners, and allocate costs for the system. Although this process essentially took place in the middle of the design process, thus complicating that phase of the project, the eventual formation of the MRF advisory board and the adoption of the cost allocation system did provide a stable foundation for the project once it was put in place.

c. Isabella CMC Implementation Plan Recommendations

Following are details of the recommended program that resulted from this Phase I Implementation Planning Process. The recommended program was designed to handle an estimated 9,700 tons of recyclable and compostable material per year :

Recycling Collection and Processing

The City of Mt. Pleasant and the County would contract for a recycling collection service with the following components:

- Weekly municipal curbside collection of newspaper, steel cans, glass containers, and HDPE bottles from all residential structures with 1 to 3 units.

- Private haulers would collect the same list of recyclables from all multi-unit residential structures (with 4 or more units) and from commercial establishments. To this end, local ordinances would require private haulers which service high-rise buildings and all commercial accounts to provide recycling opportunities within one year of program start-up.

- Isabella County would contract a private hauler to service a network of up to thirteen recycling depots to collect the targeted recyclables in the out-county area.

Isabella County would construct a "state of the art" material recovery facility with the ability to sort fully commingled container materials into separate material streams and bale all fiber materials, as well as cans and plastic. The facility would process all materials from the above collection programs as well as materials (OCC and fine paper) collected by Central Michigan University's campus recycling programs. The facility would also provide a drop-off service for residents, businesses and small haulers.

Isabella would complete the purchase of a 7.4 acre site in Union Township (adjacent to the City of Mt. Pleasant) for the Material Recovery Facility (MRF). The processing facility would be a 12,000 square foot metal pre-fabricated structure. The main structure would be clearspan with a 24' ceiling.

ONP and OCC would be tipped separately in the building directly on the floor. Vehicles would dump newspaper to one side of the baler feed conveyor. A skid-steer loader would push the paper onto the baler feed conveyor. The contaminants would be picked at the sorting stations. The clean newspaper would fall through the fluffer and into the baler.

Corrugated cardboard and fine paper would be tipped on the opposite side of the feed conveyor from the newspaper. These would be baled in the same fashion as the newspaper, though the fluffer would not be used in baling the corrugated cardboard.

Glass, cans, and plastics would be tipped commingled on the floor in front of the container feed hopper. The loader would push materials into the feed hopper for processing in a container sorting system that blends manual and mechanical separation systems for sorting the material and removing contaminants. This system would separate the recyclable materials using the following separation equipment: magnetic separator, air classifier, size-sorting trommel, and finally, hand-sorting.

Yard Waste Collection and Processing

The main goal of the Isabella Composting Program would be to encourage source reduction and on-site (such as backyard) composting of yard waste. A secondary but important goal would be to provide convenient opportunities for the separate collection and composting of yard waste which is not handled through source reduction and on-site composting methods.

The composting program proposed for Isabella County built on the existing yard waste collection programs described at the beginning of this section. The fall leaf and seasonal grass collection program and the on-call brush chipping service in Mt. Pleasant would continue in their current form.

Spring through fall, yard waste drop off sites would be operated for residents, businesses, and institutions, with the main drop-off site located at the County MRF. Shepherd residents would also have the opportunity to drop-off materials at their Village yard waste compost processing site.

The centerpiece of the Isabella County yard waste processing program would be a large scale land application effort with a local farmer. While the Village of Caseville land application program is a relatively small scale effort that did not justify windrow composting technology, the Isabella County land application program would be operating in an annual tonnage range (estimated at 3,320 tons per year) that would typically utilize traditional windrow composting methods. A land application approach developed as a recommended solution when continued use of the existing windrow composting site was threatened with closure or expensive upgrading in order to protect local surface and groundwater resources.

Yard Waste Reduction

As part of the backyard composting program composting units for food and yard waste would be distributed, and a yard waste reduction education program implemented. Selected households would receive backyard composting units for on-site processing of some yard waste and food scraps distributed through workshops and similar promotional efforts. This program would also involve concerted education and promotion efforts encouraging practices such as leaving grass clippings on the lawn and backyard composting of yard wastes.

Education/Information/Promotion and Solid Waste Reduction

Like the Buchanan, Caseville and DSWMA programs, promotion and education efforts would focus on achieving maximum participation in yard waste and recycling collection programs, as well as meeting targeted material diversion tonnage goals. See Page 15 for a description of the general education campaign planned for each community.

Isabella County took responsibility for assisting with development of some of the generic educational and promotional materials. The County was assigned the task of working with the Consulting Team to develop the generic source reduction handbook and outreach materials targeted at both businesses and residents of the community. These materials would then be individualized and used by each community.

5. City of Lansing Community Profile

As one of the larger cities in the State, and the site of the state Capitol, Lansing represented a cross section of Michigan demographics. The city has a strong blue collar manufacturing employment base including auto plants and suppliers. As well, the City had a large segment of its population employed in clerical, administrative and professional positions through state government. Like any of the larger older Michigan Cities, Lansing has struggled with maintaining its tax base and downtown while adjacent townships and communities like East Lansing have expanded vigorously with new commercial development and housing.

a: Lansing Grant Application and Pre-CMC Program Status

Although vastly different in size, Lansing was similar to the Village of Caseville in that it had not sponsored much in the way of past recycling or composting efforts. Like Caseville, as well, there was much discussion regarding the appropriate role for the City. The City sponsored a drop-off for recyclables by funding the regional non-profit recycling group, the Recyclers of Ingham, Eaton and Clinton Counties (the Recyclers). The group had been servicing the recycling needs of the tri-county region for many years and had, as recently as the year before the CMC program award, been providing a pilot curbside recycling service to the adjacent City of East Lansing, and a grant-funded effort in the City's South-Central neighborhood. Prior to receiving the CMC grant, the City purchased equipment for the Recyclers to operate a centrally-located drop-off three days a week. The site was closed just prior to the start of curbside service.

One of the barriers confronted by the City was that any serious effort to begin providing convenient, permanent recycling or composting services would require significant capital investment and commitments of annual operating funds in an already tight municipal budget.

The City of Lansing applied for CMC grant recipient status with the expectation, that funds would assist the City in development of a system with the following features:

- *Residential Drop-Off Depots:* Existing recycling processing facilities in the area (operated by the Recyclers; the Granger Companies, the largest area hauler; and Friedland Industries, the largest area scrap processor) were expected to continue to provide either free or buy-back drop-off services as they were doing at the time of the CMC application.

- *Residential Curbside Recycling:* Expected to be provided weekly to all single family neighborhoods (single family homes plus 1-4 unit buildings and rooming houses) by city collection crews in specialized recycling vehicles. A plastic bin would be provided to each household for collection of newspaper, glass, tin cans and HDPE plastic containers.

  Multi-family complexes would be provided recycling services by their current hauler, possibly through a city licensing ordinance.

- *Commercial Recycling Collection:* The existing network of private haulers would continue to develop commercial, industrial and institutional recycling services for a variety of recycled materials.

- *Residential Material Recovery Facility (MRF):* A MRF capable of processing residential recyclables would be needed to serve the City of Lansing. It was expected that other nearby communities would want to participate as well.

- *Commercial Material Recovery Facility (MRF):* Processing capacity for handling and marketing some of the commercial recyclables was already available in the area through Friedland Industries, Granger, Waste Management and Padnos Iron and Metal. These and other private sector activities would be supported.

- *Residential Curbside Yard Waste Pickup:* Weekly curbside pickup of yard waste would be provided during the growing season.

- *Commercial Yard Waste Collection:* The existing network of private haulers would be expected to develop commercial and industrial yard waste collection services for a variety of compostable materials.

- *Residential Yard Waste Drop-Off Depots:* A single drop-off area at the proposed yard waste composting site would be made available to area residents for leaves and grass as well as brush, limbs, stumps, and clean wood waste.

- *Commercial Yard Waste Drop-off:* Both the new proposed yard waste processing facility (see below) plus existing yard waste processing facilities would be expected to serve this function for the Lansing area.

- *Residential Yard Waste Processing Facility:* A facility capable of processing yard debris collected from area households would be required. Granger had offered a site for long-term lease and other private firms also were willing to do the same. The operation itself was expected to include an engineered surface staging and mixing area, windrow turning equipment, a tub grinder, wheel loader, support equipment, site improvements and buildings.

- *Commercial Yard Waste Processing Facility:* It was expected that commercially generated yard and wood debris would be processed at both the City sponsored facility as well as privately-operated wood waste processing facilities in the area.

b: Lansing Community Framework During CMC Plan Development

At the beginning of the CMC project implementation process a number of key issue areas were viewed by City staff as needing to be addressed.

- *Regional Focus for Proposed Recycling Processing Capacity:* The neighboring community of East Lansing was about to initiate a comprehensive curbside recycling service and had made arrangements to deliver that material to Friedland Industries, but had expressed interest in working with Lansing on a regional recycling project.

- *Public/Private Partnerships:* With the strong interest by some of the City's elected officials in privatization, processing was viewed as the likely area for the private sector to provide services. Initial strategies by City staff included one in which CMC funds would be used for processing equipment, a local solid waste vendor such as Granger could build the building, and other municipalities could contribute their own resources, or commitments to buy into the project.

- *Public vs Private Analysis:* Determination of the right balance of public and private capabilities required analysis of the economics of private operation versus public operation of collection and processing programs.

- *Labor:* The Teamsters and UAW were a major factor in City decisions on direct provision of residential collection services versus outside contracting or privatization options. At the start of the CMC project, union contracts had just been renegotiated so reliable long-term labor cost factors were available for this analysis.

- *Processing Technology:* Representatives for the City tended to favor source separation or separation at the curb by the driver with the accompanying belief that on-site separation of commingled recyclables at a central processing facility required excessive capital investment.

- *Decision-Making:* The City planned on hosting meetings attended by the neighborhood council groups that "wanted recycling programs right now." The City also expected to involve key council people up front and to use a public service board in a review role prior to bringing items to City Council for action. A special City Council ad hoc committee of citizens, key members of the public service board, and council members was also formed to draft the mandatory ordinance language and review the CMC plan.

In addition to the specific issues just described, the following legal, financial and institutional/political community framework was either in-place, under development or had to be addressed as part of the design and implementation process.

Institutional/Political

As mentioned above, the City of Lansing has a strong Public Services Department emphasis including an experienced and organized work force providing refuse bag collection services to a majority of City households. In the past they have also operated a landfill. The administrative structure of the Public Services Department, coupled with the committee structure of the City Council and the legal and financial analytical resources of City administration provided the institutional mechanisms required to gain approval of a significant change in municipal operations and budgets. Even prior to initiating the CMC program, the City anticipated hiring a new recycling coordinator in order to facilitate implementation of the project.

Despite these public sector capabilities, the question of public versus private roles in the CMC project, especially in processing of recyclables, was a major public policy concern to the City and a far more difficult issue than in any of the other CMC communities. City direction on this issue was driven partially by a ballot resolution that was submitted to Lansing voters midway through the process of planning the CMC project and subsequently approved. It basically required that City municipal crews directly provide for the collection, processing and marketing of recyclables.

In response to the ballot initiative and in an effort to respond to SWAP program requirements to evaluate private sector capabilities, the Consulting Team went through an extensive process to investigate the role that the private sector could play in the Lansing program. The recommended plan of building a large drop-off and transfer facility for the recyclables was suggested by the City as the approach that would allow them to adhere to the binding requirements of the ballot proposal while still providing the lowest out-of-pocket costs to the City.

In evaluating whether to support this proposed direction the Consulting Team started first with cost estimates for a publicly operated MRF. Then, in response to the interest of private parties, an advisory cost quote for the City of Lansing MRF was sought from those firms. Responses or expressions of interest were received from seven different private or non-profit firms, some with significant capabilities already on line (i.e.: baling capacity installed and markets established). These advisory cost quotes were approximately 10 to 20% lower than the original public sector cost estimates.

At this point the analysis supported working with privately available services - if this would be allowed by the City interpretation of the adopted ballot proposal. The City then determined that the concept of a drop-off and transfer facility would allow them to meet the intent of the ballot proposal, while still contracting with these interested private parties for final processing and marketing.

The capital and operating costs for this hybrid approach were then developed verifying that it did represent a significantly lower out-of-pocket cost for the City. The largest of the local processors, Granger, then responded with their final estimate for processing as an alternative to the City's approach. This cost, though, was still higher than the recommended alternative.

Because of the relatively lower out-of-pocket costs for the proposed alternative, the decision was made to support the recycling transfer concept as part of the CMC capital request. The recommended approach preserved a number of market options for the City, allowing them to use a competitive bidding process to continually seek the best price for the materials that would be consolidated at the facility.

Legal

The City was able to use its existing ordinance making powers to establish mandatory recycling requirements and the yard waste disposal and burn ban. Ordinance language was also used to establish the multi-family mandatory recycling provisions and the requirements that needed to be placed on these property managers and their haulers. The multi-family provisions of the ordinance had to be amended, after extensive negotiations with the City's counsel, elected officials, multi-family property owners, and MDNR to determine whether the ordinance had to require on-site recycling services to meet the intent of the CMC program.

Financing

Funding issues had to be confronted by the City on two levels. The first being capital and the second operating. Additional capital funds were required by the City to purchase part of the site for the Transfer Station for recyclables, to clean up some site contamination and to cover costs for parts of the program that were beyond the scope of available CMC funds. This included the need for solid waste vehicle storage and new trucks for the yard waste collection program.

Fortunately the City voters had approved an environmental bond sale in the prior year, a portion of which had specifically been dedicated to capital requirements associated with increased recycling and solid waste services. This allowed City staff a significant amount of flexibility in working through the implementation planning process.

City staff, elected officials and the Consulting Team also had to develop a funding system for operating costs. Refuse costs are covered through a volume-based bag program, but residents were not required to use the city's services. This effectively eliminated the bag-fee system as a potential method for covering recycling costs since it would result in recycling costs for all City residents being paid for only by those that used the City's refuse services. Instead the City had to examine other types of financing mechanisms ranging from general appropriations through a millage increase dedicated to solid waste management to user-fee charges tied to either water or electricity bills.

The residential user fee mechanism that was finally chosen covered costs for the curbside recycling and yard waste collection and composting programs. The user fee approach became more complicated when it was decided that a household should be allowed to petition for exemption from the fee if it could demonstrate that it used alternative drop-off programs and not the curbside services.

c: Lansing CMC Implementation Plan Recommendations

Following are details of the recommended programs that resulted from the implementation planning process. The program would be able to handle approximately 26,500 tons of recyclables and compostables each year.

Recycling Collection and Processing

Curbside collection of recyclables would be performed by the City of Lansing Public Service Department. The following program features would be implemented:

- Weekly curbside collection of newspaper, glass, steel cans, and HDPE bottles for all residential structures with 1 to 4 units.
- Materials segregated at the truck and delivered to a municipally operated Recycling Transfer Station, where they would be shipped to local processors;
- Requirement through City ordinance that by November 1992, owners of multi-family properties with five or more units set up on-site, multi-material collection either on their own or through a private hauler. Owners of commercial, institutional, and industrial buildings must work through haulers to recycle the materials designated by the ordinance, including OCC.
- Collection from single-family dwellings would begin when the recycling transfer station was expected to be operational, estimated to be November 1991 and written into the mandatory recycling ordinance. This date was also selected as being as responsive as possible to the June 1991 date for curbside recycling start-up called for in the 1990 voter-approved ballot resolution.
- The City would develop a publicly operated recyclables transfer station in which materials would be unloaded directly into larger transport containers and shipped unprocessed to existing private sector processors. An enclosed vehicle storage area of approximately 10,000 square feet would be added to the building with costs to be covered by the City's Environmental Bond Fund.

The building would include approximately 34,000 square feet of enclosed space using a fabricated steel structure, in addition to about 4,000 square feet of covered (roll-off) pit area. Twenty-five vehicle storage spots were designated off two aisles.

The recycling transfer area included a traffic lane tipping area on the inside of the building, as well as covered eight foot deep inclined pits with ramps holding the 40 cubic yard roll-off containers on the outside. Space had been allocated for five roll-off pits; two for ONP; one for steel cans; one for colored HDPE bottles; and one for natural HDPE. These containers were serviced from the side of the building and would be left open to meet the space requirements of the collection vehicles and containers. Concrete bunkers were to be located next to this tip area, outside the building to receive the three colors of glass.

ONP, cans and HDPE (commingled natural and opaque) would be tipped directly into roll-off containers located inside the building and would be shipped loose in the roll-off containers to local processors.

Color separated glass would be tipped into the concrete bunkers outside and then moved by front-end loader into 60 cubic yard gravel trailers for shipment to glass markets in Dearborn and Charlotte.

CMC funds could be used to cover costs for the actual material storage and transfer function within the building. Capital costs for the vehicle storage function had to be covered by the City. Building costs were allocated on the basis of the square footage dedicated to each use.

Yard Waste Collection and Processing

The composting program for the City of Lansing called for the collection by City crews of yard waste (grass, leaves and brush) separate from refuse and other materials. Most yard wastes were being collected as part of local refuse collection services and disposed in an area landfill. For two years, the Public Service Department provided separate leaf collection for eight weeks in the fall and five weeks in the spring.

Households eligible to receive City refuse collection services would be asked to place leaves and grass in plastic bags and bundle brush with twine or string, and place the items at the curb for weekly pickup on the same day as refuse collection from April through November.

Other generators of yard waste such as businesses, apartments and others who are not eligible receive curbside refuse collection would be required to drop-off their yard waste at the City's designated compost site.

That site would be selected through a bidding process - the decision regarding yard waste composting was not constrained by the ballot question, giving the City more flexibility in considering both public and private sector options. Lansing selected a privately-owned and operated facility approach because of the accessibility to sites that were more suitable than any owned by the City. The private sector approach also meant that regional issues could be addressed through independent contracts with other municipalities and private haulers.

This process, planned for the spring of 1991, would be open to all potential composting vendors of which three were expected to respond. Two of these vendors in verbal and written communications with the City and with MDNR had quoted tipping fees for yard waste of $4.00 and $5.00 per cubic yard. The City had assumed a yard waste processing tip fee of $4.50 in the proposed 1991 fiscal year budget.

An estimated 18,564 tons of leaves, brush and grass in varying proportions would be delivered by the City. An estimated 6,188 tons would be delivered by Lansing residents and commercial generators. The City would require that the designated facility be staffed six days per week by the site operator. The vendor operating the designated site would be expected to provide suitable equipment for de-bagging of all material and screening non-organic bag residue out of finished products. Raw material would be piled in windrows and turned weekly or as indicated by pile temperature. Following the active decomposition period, the compost would be left in large curing piles for a minimum of 30 days. Prior to distribution, the compost would be screened a final time.

Yard Waste Reduction

As part of the promotion and education program, a yard waste reduction demonstration and workshops would be developed to promote a decrease in the amount of yard waste needing collection at the curb.

Education/Information/Promotion and Solid Waste Reduction

Like the other CMC programs, promotion and education efforts would focus on building participation in yard waste and recycling collection programs, as well as meeting targeted material diversion tonnage goals. See Page 15 for a description of the general education campaign planned for each community.

The City of Lansing took responsibility for assisting with development of some of the generic educational and promotional materials. The City was assigned the task of working to develop the generic recycling collection program outreach materials including posters, an announcement flyer for mailing, a how-to brochure to be used with bin delivery, and quality control cards to be distributed during collection for households not preparing materials correctly. These materials would then be individualized and used by each community.

6. SOCRRA Community Profile

As mentioned in the introduction, the Southeast Oakland County Resource Recovery Authority has a long history of public sector involvement in providing recycling drop-off services and compost processing services as well as operating publicly-owned landfills, transfer stations and incinerators. Members of SOCRRA are the communities of Berkley, Beverly Hills, Birmingham, Clawson, Ferndale, Hazel Park, Huntington Woods, Lathrup Village, Madison Heights, Oak Park, Pleasant Ridge, Royal Oak, Royal Oak Township and Troy.

a: SOCRRA Grant Application and Pre-CMC Program Status

SOCRRA's member communities are all suburbs in the Metropolitan Detroit area and vary in demographics from the rapidly expanding City of Troy to well established and fully developed communities like Madison Heights and Royal Oak.

Most of these communities had already sponsored multi-material recycling drop-off centers at their public works yards. They had also initiated curbside pickup of yard waste during the growing season, delivering the collected yard waste material to a SOCRRA-owned and operated yard waste transfer facility for eventual transfer to a SOCRRA-owned and operated yard waste composting site. Many of the communities wanted to get started on more convenient recycling services but SOCCRA had not yet made the kind of investment in equipment or capabilities that would make this possible.

SOCRRA has administrative and contractual control of 250,000 tons per year of residential and commercial waste from within the jurisdiction of the fourteen member municipalities. Their solid waste management infrastructure, under direct SOCRRA control, included:

- An incinerator which had ceased operation in 1988 for regulatory reasons and had since been functioning as a transfer station
- A main transfer station which was being used to process municipal solid waste as well as some recyclables and compostable yard waste.
- A landfill that was nearly filled to its approved capacity and had not yet been expanded although proposals had been considered.
- An Authority's compost site, located at the landfill, which was operating despite an ongoing dispute with the host community, Rochester Hills, over zoning and odor issues.

At the time of CMC project initiation the Authority had developed goals for the 250,000 tons per year as follows:

Waste to Energy (600 tpd * 75% utilization)	164,250 tons/yr
Compost (approx. 15% of their waste stream)	37,500
Recycling	37,500
Waste Reduction	5,000
TOTAL	244,250

The composting goals had already been achieved. The CMC project was intended to result in realization of the recycling goals and assist with the waste reduction goals Development of the waste-to-energy component had been initiated concurrently with scaling up of the recycling programs with CMC assistance - but with a much longer timeline anticipated due to permitting requirements. In the interim SOCRRA intended to use private landfill capacity in the region.

SOCRRA's application for CMC grant funding was targeted specifically at their need for a MRF and for continued improvement in their yard waste processing system.

Proposed Recycling Building: SOCRRA's plan was to transform their transfer station into a MRF, while still retaining the flexibility to use it as a waste transfer facility. SOCRRA staff had drawn up conceptual plans for a 100 foot by 60 foot (6,000 sq. ft.) addition that would have to meet the exterior construction quality of the balance of the building. Integration of the additional space with the existing building was viewed as the major design challenge.

Because the building was already owned by SOCRRA and would continue to be operated by SOCRRA staff, the MRF conversion would be a conventional design and build process. Their staff, which included licensed professional engineers, would want to work on layout but would not be able to provide engineering time other than overview and review.

SOCRRA communities controlled a significant quantity of recyclables and were prepared to deliver them to a SOCRRA controlled and operated MRF. This volume would allow SOCRRA to construct and operate a MRF that would be competitive in scale and provide a great deal of flexibility to the Authority to secure the best market prices for its materials and to allow it to expand into additional materials with relative ease. This control reflected the historical approach of SOCRRA to facilities, tending to operate a facility (landfill, transfer station or incinerator) when it plans to make a long-term commitment to that function as part of its system.

Proposed Composting Facilities: SOCRRA's plan also included an upgrading of their yard waste composting operation. SOCRRA had received grants in the past from the MDNR's Clean Michigan Fund and Solid Waste Alternatives Program to purchase a windrow turner and a compost screener.

Their existing site for composting had an operating history that at times resulted in court intervention to address zoning and odor disputes with the host community and area residents. The composting operation, which was on top of the clay cap of an old incinerator ash landfill, also had to deal with large quantities of material being delivered in plastic bags as well as muddy operating conditions which prevented regular turning with windrowing equipment. MDNR staff had made it clear to SOCRRA that the integrity of the clay landfill cap had to maintained at all costs if the site was to continue being used for composting. At a minimum SOCRRA staff had determined that addressing all these concerns would require an engineered staging area at their existing site and some type of de-bagging system prior to windrowing.

Following are some of the overall design assumptions that SOCRRA brought to the implementation planning process.

Recycling Collection Programs

- *Residential Curbside Recycling:* All residential recycling services would be the responsibility of individual communities. The mandatory requirements of the CMC program would adhere to all SOCRRA communities. A time window would be defined during which communities would be expected to come on-line with their collection programs. To initiate the CMC funding for all SOCRRA programs, MDNR staff and SOCRRA representatives agreed that communities with a total of at least 100,000 in population would need to be signed onto the CMC program requirements in order to proceed with development of the MRF.

  The CMC requirements would apply to both single family neighborhoods as well as multi-family complexes. Multi-family complexes would be provided recycling services by their current hauler as required under a proposed SOCRRA-wide licensing ordinance adopted by each community.

- *Commercial Recycling Collection:* The existing network of private haulers would continue to develop commercial and industrial recycling services for a variety of recycled materials.

- *Financing:* SOCRRA staff and board had extensive experience in management of publicly-owned and operated programs. Their greatest concern was for the cost-effectiveness of any new CMC programs. If the recommended programs were cost effective, the authority knew that it had all the necessary tools for securing additional amounts of capital (if needed) beyond that which was available through the grant program. These included leveraging of private capital financing through service contracts, use of tipping fee to pay off capital, and the use of bond funding for larger capital procurement.

- *Processing Technology:* Because of SOCRRA labor costs, the authority tended to favor low labor input processing technologies. For recycling this led to a bias towards source separation or curbsort by the driver (who is employed by a private hauling firm paid by local community under hauling contract--not by the authority).

- *Decision Making:* Staff indicated that the decision making process, in their opinion, would be quick, "since the authority representatives are all city managers and are very decisive." There was some concern that all communities might want to have a say in how the program decisions were being made. They had recently created a "recycling coordinating committee" and intended to use that committee to stay "one step ahead" of the implementation design process.

In addition to the above, following is an overview of the community framework that was in-place to support development of the recycling, composting and education programs.

Institutional/Political

As an operating solid waste management authority with a long track record of project management, SOCRRA and its member communities were fully prepared to handle the CMC implementation process. The Authority had all necessary institutional and political mechanisms in place including its board which is made up of City Managers from each participating municipalities as well as a recycling coordinating committee to pay direct attention to the CMC MRF development process. Despite the significant implementation tasks, there was never a point in the implementation process where SOCRRA had to create an institutional structure before it was able to address the substance of an issue.

Legal

The CMC program requirements for mandatory recycling would be applied to all households in SOCRRA. The necessary ordinance language would need to specify participation requirements for all households receiving curbside recycling services. City contracts for recycling services would need to specify the SOCRRA MRF as the location that recyclables are to be delivered. Ordinances would also need to specify rules and requirements for a licensing program to guarantee that all multi-family complexes receive recycling services as well (if not already covered under city contract).

Representatives of SOCRRA indicated they may eventually want to consider an ordinance requiring that certain easy to recycle materials (e.g.: OCC, clean wood waste) not be allowed in commercial trash -- thus furthering the development of recycling collection programs for those materials and increasing demand for recycling processing services from all MRFs in the area including SOCRRA's.

The CMC program requirements would apply a yard waste disposal and burn ban to both the residential and commercial waste generators in SOCRRA. This would be accomplished through the same regulatory mechanisms as used in the recycling programs.

Financing

Each community was expected to make its own arrangements to cover the cost of recycling collection services. A variety of mechanisms were available. If multi-family complexes arranged for their own trash and recycling services, costs for recycling services to those complexes would need to be recovered by the private haulers that provided those services. The licensing mechanism would specify that costs for recycling services be built into trash collection fees to guarantee an incentive to make the system work.

Processing costs (as well as market revenues) at SOCRRA's residential MRF would need to be recovered through the same mechanisms as those used for the collection systems. Their existing method of charging on a material by material basis for marketing of source separated materials brought to their transfer station would be retained, although the rates were expected to change once the new processing capabilities were in place and new market contacts established.

c: SOCRRA CMC Implementation Plan Recommendations

Following are details of the program recommendations made as a result of the implementation planning process.

Recycling Collection and Processing

Responsibility for the collection of recyclables would continue to rest with the individual communities within SOCRRA. To ensure a consistent level of service across all communities, the following program design features would be implemented:

- Weekly or bi-weekly curbside collection by individual communities for all residential structures 1 - 4 units in size;
- Collection of newspaper, glass, steel cans, and HDPE plastic bottles;
- Materials would be segregated at the truck and delivered to the SOCRRA Material Recovery Facility (MRF);
- A policy adopted by SOCRRA members required each community to license private waste haulers to provide recycling collection service to multi-family buildings (5 or more units in a structure) by January 1, 1992;
- Corrugated cardboard would be separated from commercial loads delivered to the SOCRRA Transfer Station.

One central MRF would be built to service all SOCRRA communities. The facility would be capable of processing all source separated recyclables collected by municipal curbside programs, material collected by private haulers from multi-unit buildings plus corrugated cardboard and other materials separated from commercial loads at the transfer station.

The MRF would be located at the north end of the SOCRRA transfer station site. The layout was designed to process materials already segregated at the recycling trucks into six streams – newspaper, three colors of glass, cans and HDPE. Cans and HDPE could also be received commingled, if communities chose to do so.

The processing facility would be a 28,500 square foot, pre-fabricated metal structure with a 30-foot high ceiling. This height would provide adequate room to receive, process and store all delivered materials, plus clean OCC from the transfer station.

Clean cardboard would be tipped directly into the baler feed conveyor. Newspaper would be tipped separately on the building floor near the ONP feed conveyor. Cans and plastics would be dumped segregated on the floor near the container sorting conveyor. Glass would be tipped into three separate bunkers outside the building.

A segregated load of plastic containers or tin cans would be pushed into the container sorting conveyor pit by a skid steer loader. From here the containers would be conveyed up an incline dropping on a contaminant sorting conveyor. Any visible contaminants would be removed and thrown down a chute leading to a residue collection bin. The containers then would pass under an over-head magnet where ferrous cans would be removed and deposited into a large steel cage. Any aluminum (when running the line with cans) or plastic would drop into a chute and pass over a screen before dropping on a second sorting conveyor. Small residue would drop through the screen and be collected in a residue bin. The remaining containers would be visually inspected and sorted into their respective holding cages. The HDPE would pass through a perforator before being collected in the cage. When the cages were full, they would be wheeled to the baler conveyor and loaded into the conveyor pit and baled.

OCC and ONP would be pushed by skid loader into their respective baler conveyor pits. OCC would be baled. The ONP would be conveyed up an incline and dropped on the sorting conveyor where contaminants would be removed and dropped into a bunker below. Clean ONP would drop off the end into a different bunker. The ONP would be periodically scooped up by the skid steer loader and transferred to the baler line for baling.

Baled ONP, OCC, plastic, and cans would be stored in the building or in trailers outside until shipping. Glass would be loaded from the bunkers into 40 cubic yard roll-off containers for shipment to the market. Approximately 24,000 tons of recyclable material collected from curbside households and multi-family buildings would be delivered to the SOCRRA MRF annually during the first few years of operation.

Yard Waste Collection and Processing

The composting operation would continue to be located at the Rochester Hills landfill site (on the flat area west of the existing sloped windrow area), since a site, equipment and personnel are already in existence and providing this service. It would handle approximately 48,000 tons each year based on the documented recovery rates from the past years of operation. A number of modifications would be implemented to improve site operation, including:

- a de-bagging trommel at the transfer station,
- a slag surface to allow heavy equipment operation in all weather conditions, to protect the landfill cap and to control leachate, which would be collected in a runoff pond,
- a retention pond to collect storm run off and leachate, and
- an asphalt haul road to allow all weather vehicle access.

Bulk leaves, bagged grass, woodchips and sized-reduced brush would continue to be delivered to the SOCRRA Transfer Station by municipal collection crews, individual residents and commercial generators. The yard waste disposal and burn bans were expected to increase citizen and business participation in all the yard waste collection and reduction programs.

At the transfer station, yard waste materials would be passed through a trommel screen located over a transfer bay. The trommel would rip open the plastic bags and remove the plastic and over-sized contaminants. The vast majority of the yard waste and sized-reduced material (e.g. brush) would fall through the trommel's holes and into an open-body truck which would transport the material to the compost site. This would aerate the yard waste, help prevent any additional anaerobic conditions and lessen odors. The remaining waste materials would be landfilled.

Raw materials delivered to the compost site would be piled in windrows and turned weekly or as indicated by pile temperature, again reducing odor potential. Windrow aerating would be done with a windrow turner at the site. The active composting phase would last for approximately six to nine months. Windrows may be combined as volume reduction occurs and left unturned from December through March to retain heat with the mass. Finished compost would be screened to eliminate contaminants and larger brush chips.

Yard Waste Reduction

As part of the promotion and education program, a yard waste reduction demonstration and workshops would be developed to promote a decrease in the amount of yard waste needing collection at the curb. SOCRRA, as the producer of the generic outreach materials for yard waste reduction would serve as a pilot for methods targeted at encouraging yard waste reduction for up to 30% of all grass clippings.

Education/Information/Promotion and Solid Waste Reduction

Like all of the other CMC programs, promotion and education efforts would focus on achieving maximum participation in yard waste and recycling collection programs, as well as meeting targeted material diversion tonnage goals. See Page 15 for a description of the general education campaign planned for each community.

SOCRRA took responsibility for assisting with development of some of the generic educational and promotional materials. The authority was assigned the task of working to develop the generic yard waste collection, reduction and backyard composting outreach materials. These materials would then be individualized and used by each community.

B: COMMUNITY EVALUATIONS

Following are brief summaries of the performance of each CMC program as of August 1993, with actual service times varying from a six months to a few weeks. Five evaluation factors are used in this summary:

- Program Design
- Equipment
- Participation and Diversion Rates
- Program Efficiency
- Additional Strengths/Weaknesses/Problems

1: Buchanan

The Buchanan program achieved start-up during January of 1993 when the MRF was completed and full-scale collection programs implemented.

a: Program Design

As per the implementation plan recommendations, the City of Buchanan is currently operating a mandatory, once per week curbside collection service for recyclable materials for all single family and apartment residents and targeted ICI generators. Recyclables are processed (sorting, contaminant removal and baling) at the City's recycling facility established at the Authority's landfill prior to shipment to markets.

The City has also instituted a yard waste collection program with the material delivered to a yard waste composting site, also located at the Authority's landfill, all per the proposed CMC plan.

Table 2: Start-Up Schedule — Buchanan Programs

Program	Start-Up Date
Distribute Curbside Recycling Bins	November 1992
Curbside Recycling Collection Start up	Single family homes started December 1992 Multifamily homes started April 1993 Commercial service started March 1993
Recycling Processing	January 1993 (Open House in November of 1992)
Central Composting Facility	Incomplete; existing city leaf site used in interim
Home Compost Bins	950 purchased, February 1992 Workshop/distrib., February 1992

The most significant shortcomings during the program design phase were in coordination of the different elements of the procurement process. For example, while some system components (e.g. the MRF building) were completed early in the process, the program could not begin operating until other system components were in place (container sorting line and recycling collection vehicles). As a result, the building was completed and remained dormant months before the equipment was obtained. Many program features were delayed more than six months past the initial start-up date. Some problems still remain, such as the composting processing facility, which at time of this report was still only in the early stages of site development.

b: Equipment

Equipment performance for Buchanan was relatively trouble-free, with a few problems experienced with selected pieces of equipment in recycling collection and processing as shown in Table 3, on the following page.

Buchanan is experiencing delays in expanding and modifying their older compost site, yet the balance of the yard waste composting and source reduction efforts are very successful.

c: Participation and Diversion Rates

Curbside recycling for single family households started December 7, 1992. Acceptance of curbside recycling is high; Buchanan reports attaining a 50% weekly set out rate, and estimated 80% overall participation. A detailed tracking system is not yet in place, however, the amount of refuse hauled to the landfill in the four months from December 1992 to March 1993 was 20% lower than during the same period in 1992.

Table 3: Highlights & Difficulties — Buchanan Recycling Programs

Recycling Component	Highlights or Difficulties
Program Start-Up - Curbside	• Kahn curbsort truck generally works very well • Truck could not access narrow downtown alleys
Processing	• MRF building construction completed in three months, yet equipment selection and delivery delayed start-up nearly nine additional months. • Portable yard ramp didn't arrive until mid-January of 1993 resulting in problems with shipment of materials. • Changes in MRF design components, including the addition of expansion and sorting capabilities, building skylights, and fire suppression details placed pressure on the implementation schedule. • Initial storage problem until additional boxes were obtained. • MRF capital costs were nearly 25% below projected • Once operational, the MRF has been working well
Yard Waste Component	**Highlights or Difficulties**
Yard Waste collection	• Home composting workshops well received; additional workshops to educate and give out free bins continue in 1993. • Pay per bag collection system using kraft paper bags was initiated along with yard waste disposal and burn bans. • Collection of bags on Tuesdays only, with requirement to call in request.
Composting	• Extensive delays experienced in compost site modifications. • Leaves and other yard waste taken to site behind the DPW building pending completion of compost site improvements. • Windrow turner, tub grinder, and trailer are shared with three other cities.

On a total tonnage basis the data suggests that 264 tons would be recycled in the first year compared to a planned 241 tons - a 10% increase over plan. Another 978 tons of yard waste was also diverted, over 50% higher than the planned 639 tons through composting, although an additional 309 tons was targeted for diversion through backyard composting and grass cycling.

Another basis of assessment is to compare recovery per unit served. The data suggests that recovery per household unit per year is projected at 369 pounds versus a planned 290 lbs. Much of this increased recovery is due to the ONP data which show per unit recovery rates at 254 pounds, nearly 30% higher than the projected 180 pounds per unit. Most other category specific recovery levels were on target. For yard waste, recovery is projected at 1107 lbs per unit compared to a planned 723 pounds per unit.

d: Program Efficiency

Pro-rating of costs over a year long period using six months of base data has been used to make a comparison of actual program efficiency to projections from the Implementation Plan.

As shown in the following chart, collection cost projections appear to be lower than anticipated. Specific anticipated cost items included employee costs (e.g. wages, benefits); maintenance, supplies, and other equipment-related costs; and administrative costs (e.g. insurance, miscellaneous costs). While all costs incurred within the first three months were below budgeted amounts, all of the items that would typically be anticipated in a more mature program (e.g. maintenance costs) were not yet be incurred in such a young program as Buchanan's.

Table 4: Collection Operating Costs for Buchanan

Collection Operating Costs	
CMC Implementation Plan Budget	$34,543
Actual Expenditures to Date (first 3 months)	$5,898
Projected Annual Cost Estimate	$23,592
% Difference	-32%

The pro-rated annual cost for recycling processing in the following table is estimated to be $85,796, or about 48% higher than the CMC budget. The increased cost is associated with a 10% increase in MRF throughput tonnage over the CMC Implementation Plan estimate. Specific anticipated cost items included employee costs (e.g. wages, benefits); maintenance, supplies, and other equipment-related costs; and administrative costs (e.g. insurance, miscellaneous costs). Specific line items contributing to this increase include the relatively high annual cost of labor, estimated to be about $18,000 greater than the CMC estimate, and building replacement costs, which were not included in the CMC Implementation Plan operating cost estimate. Some of this cost is attributed to the start-up phase of the MRF indicating that the MRF performance will likely exceed the efficiencies targeted in the plan on a per-ton basis.

Table 5: Processing Operating Costs for Buchanan

Processing Operating Costs	
CMC Implementation Plan Budget	$58,119
Actual Expenditures to Date (first 3 months)	$19,799
Projected Annual Cost Estimate	$85,796
% Difference	+48%

Determining the efficiency of the recycling programs in delivering quality materials to markets is measured to some degree by the value received for the materials. Market prices have dropped significantly since the 1991 CMC Implementation Plan was prepared. In particular, glass prices have declined appreciably, from $47 per ton to between $5 per ton (green glass) and $32 per ton (clear glass). Aluminum and steel can prices have also dropped, from $1,120 per ton to $460 - 500 per ton for aluminum, and from $36 per ton to $20 per ton for steel cans. The difference in aluminum and steel prices may be due to small quantities shipped and because material is shipped loose rather than baled. Although the sales price for aluminum is significantly lower than projected, it is reflective of the price paid by other buyers in the area.

e: Additional Strengths/Weaknesses/Problems

There are three strengths of the Buchanan CMC approach that deserve mention.

- Strong public acceptance and support is evident by the participation and diversion numbers and the general positive feedback from citizens at all levels (from householder to elected officials). This can be attributed to the participatory approach taken during implementation planning during which citizen's and opinion leaders were given a chance to contribute to and gain a better understanding of the program. The consistent direction and leadership of the City administration also contributed to this result.

- The technical challenges of developing the recycling facility and start-up of the collection programs have been handled efficiently.

- While Buchanan benefited from its membership in the Southeast Berrien County Landfill Authority, it was not hindered by the barriers of trying to coordinate actual program details with numerous other communities as was the case for three of the other CMC projects. This "going-it-alone" approach can provide for improved coordination and implementation and can help improve the overall program performance. Many other communities take this path of least institutional resistance. Communities of Buchanan's size, however, have difficult trade-offs to weigh with the economies of scale required for cost effective recycling and composting operations. Again, Buchanan had the best of both worlds in that the authority will provide these economies of scale in the long run.

Continued success for the City's program will require that the investments made in processing facilities for both yard waste and recyclables be utilized more fully on the part of the Authority's full membership. This will result in lower processing costs, more efficient operations and better diversion from the total waste stream.

Promotion and education efforts will also need to continue in order to insure the continued participation and increased diversion of materials by the City's own residents and businesses.

For program administrators, these additional management requirements will need to receive higher priority than given in the past start-up period. During program start-up the program lacked sufficient dedicated staff time on the part of the City - with most assignments handled directly by the City administrator and ending up delayed as other critical and conflicting demands took precedence. Service staff and the advisory committee will need to be given more responsibility if continuous improvement in performance of the CMC sponsored programs can be expected.

2: Caseville

The Caseville program achieved start-up during the late fall of 1992 when the processing facility was completed and full scale recyclables and leaf collection programs were implemented.

a: Program Design

As per the implementation plan recommendations, the Village of Caseville is currently operating a once-per-week, mandatory curbside collection service for recyclable materials for all single-family and apartment residents and ICI generators. Recyclables are processed (primarily baling) at the Village's recycling facility established at the local DPW yard prior to shipment to markets.

The Village has also instituted their ban on landfill disposal and open burning of yard waste and has instituted a yard waste collection program with the material delivered to a local farmer for land application, all per the proposed CMC plan.

Implementation of the recycling drop-off stations was scheduled to coincide with the beginning of the tourist season in June of 1993.

Table 6: Start-Up Schedule — Caseville Programs

Program	Start-Up Date
Distribute Curbside Recycling Bins	November 1992
Curbside Recycling Collection Start up	Single family and multi-family homes started November 1992 Commercial service started January 1993
Recycling Processing	November 1992
Recycling Drop-off Stations	June 1993
Yard Waste Collection and Land Application Arrangements w/Farmer	November 1992
Home Compost Bins	350 purchased in late summer of 1992 Workshop/distrib. Fall/Winter 1992

Implementation of most of the recycling program was delayed slightly from a mid-summer planned start-up. This resulted in program roll-out during the off-season with little or no tourist participation, a fact which has had a significant impact on participation and diversion rates.

b: Equipment

A variety of equipment was purchased for both the recycling and yard waste composting components of Caseville's program. Highlights and difficulties are pointed out in the following charts.

Table 7: Highlights & Difficulties — Caseville Recycling Programs

Recycling Component	Highlights or Difficulties
Program Start-Up - Curbside	• Kahn curbsort truck works very well and has plenty of capacity and versatility to service both residential and ICI customers • Large turning radius creates problems in servicing narrower alleys with tight corners - slows down driver productivity
Processing	• Facility working as planned

More difficulties were experienced with the yard waste collection program, especially with the leaf collection equipment as noted in the following summary chart.

Table 8: Highlights & Difficulties — Caseville Yard Waste Programs

Yard Waste Component	Highlights or Difficulties
Yard Waste collection	• Leaf loader is slow; used equipment has had breakdowns • Fall leaf collection time has been excessive • Three collections in spring may alleviate challenges with seasonal population fluctuations • Brush chipper has worked well
Composting - Land Application	• Has proven to be a low cost approach. Minor contamination problems reported. Site also is difficult to access during wet weather and backup sites are being arranged.

The leaf loader used a raking/light suction mechanism which does limit the amount of blowing material usually associated with high suction leaf vacuums. However it also made servicing of the Villages many non-standard streets very difficult (gravel and dirt roads, streets with no curbs, etc..). Equipment operators have concluded that a vacuum based system would be more flexible and better suited to their needs. The procurement documents allowed both types of leaf loaders to be bid, but the one chosen was selected due to its lower cost (as a piece of used equipment).

The emerging contamination problem at the land application site is being closely monitored. Education programs are emphasizing the need to keep contaminants out of the yard waste and collection crews are stepping up inspection efforts at the curb. The Village is also moving more aggressively towards grass cycling and is encouraging the use of mulching mowers and backyard composting alternatives.

c: Participation and Diversion Rates

As stated earlier, program roll-out took place during the late fall at the beginning of the off-season when many summer season residents and tourists had already departed. The Village chose to limit promotional expenditures as well in order to focus that effort on the following start-up of the tourist season. For these reasons, some recovery rates such as those for ONP and green glass are slightly lower than anticipated. However, recovery rates for several materials, including brown glass, clear glass, OCC, and steel cans were higher than estimated. For all materials combined, the actual recovery rate of for the first six months has been 235.8 pounds per household per year, a 14% increase over the estimated recovery rate.

Commercial recycling participation has grown rapidly since program start-up, reaching 5.5 tons in the month of May with approximately 47 of a total of 117 ICI generators receiving weekly recycling services. With addition of a targeted set of the of the remaining ICI generators the Plan goal of 13 tons per month appears to be attainable.

Yard waste collection efforts have been more successful at diverting material from landfill disposal. Fall leaf collection alone resulted in diversion at levels over 40% higher then the CMC recovery goals. The high diversion is believed to be a result of the large numbers of mature oak trees in the community - not taken fully into account in CMC projections, as well as the fact that diversion programs through backyard composting were not yet implemented at the time of the first fall leaf collection. A total of 65.25 tons of yard waste were recovered in the two-month period. Data on grass diversion efforts during the remainder of the growing season is still incomplete.

d: Program Efficiency

Since only 5 months of program operations could be evaluated, a comparison of cost data may not yet be very meaningful. The proposed operating budget for the Village and reported expenditures since start-up in November 1992 are summarized in the following table. Note that in the reporting on the actual operating budget, service fee income has been included, which is received by the Village from all households and businesses. This source of revenue was not included in the original budget plan although it was understood to be one option for the Village in meeting their obligation to finance the operating costs of the program.

Table 9: Costs and Revenues — Caseville Programs

Item	CMC Plan Annual Budget	Spent to Date (Nov 92 - May 93)	Projected Annual Cost
Recycling			
Collection	$19,219	$1,806	$15,641
Processing	$14,837	$1,570	$13,008
Yard Waste			
Collection	$14,142	$2,021	$7,830
Processing	$1,950	$0	$0
Sub-total	$50,148	$5,397	$36,479
Other Costs	$0	$4,044	$6,246
Total Costs	$50,148	$9,441	$42,725
Materials Revenue	($5,513)	($10)	($1,666)
Service Fees	*	($4,475)	($47,598)
Net Cost/(Surplus)	$44,635 *	$4,956	($6,539)

* At the time of adoption of the CMC Implementation Plan a service fee system had not yet been conceptualized.

It appears that both the collection and processing costs for the recycling operation will be below anticipated budget (note that equipment replacement is not included in the actual cost reports supplied by the Village but is part of their projected cost as long-term program operation is required).

Marketing of material was always believed to be the most difficult challenge for the Caseville CMC program - heard in local community meetings as "recycling won't work because there aren't any markets." No materials have been marketed to date, with the exception of $10 worth of ONP. While prices quoted for colored HDPE, OCC and green glass were lower than anticipated, quotes for most materials, including brown glass, clear glass, ONP, and steel cans, were higher than original CMC estimates.

For every material collected except OCC and colored HDPE, current market prices exceed estimated market prices that were anticipated for the program in 1991. This is probably an indication of conservatism in the original estimates and the attention and resourcefulness brought to marketing of materials by the Village's recycling facility operator. For example, self haul of material to regional processors and end-markets has been used in order to gain better prices and reduce transportation charges.

e: Additional Strengths/Weaknesses/Problems

There are three strengths in the Caseville CMC implementation program that deserve mention.

- The Village has successfully found a good private sector partner in Green, Inc. to operate the processing facility, collection programs and to assist in program management and promotion. Their land application program also benefits from a good farm operation providing quality services at affordable prices.

- Despite much turnover in leadership, the Recycling Committee has and continues to provide a good forum for continued development of the recycling programs.

- The cost recovery system developed for both businesses and residents, with a graduated system for ICI accounts ($3 for small generators; $15 for medium-sized, $40 for large generators, and $100 for extra large) builds a solid and innovative foundation to support the program financially.

There are also a number of challenges ahead for Caseville that will require directed efforts to overcome in order to insure program success.

- Seasonal needs of summer residents and tourists will dominate program management and have a major influence on program performance. The Recycling Committee and the Village's contractor need to focus education and promotion efforts around the tourist season to build momentum for the program while continuing to build a foundation for the program with year round residents during the off-season. An enforcement effort may be needed if voluntary acceptance of the mandatory recycling provisions does not occur even after concerted education and promotion efforts.

- Like many small villages, equipment that is necessary for a municipal program is often under-utilized. Replacement or upgrading of equipment is costly and difficult to finance. The Village will need to take steps to insure that the CMC equipment is repaired and modified as needed to retain its usefulness and lengthen its lifetime. This will also require careful attention to ongoing maintenance as well as build up of some type of equipment replacement fund to minimize the cost of replacement when it is needed.

- The success of a recycling and yard waste diversion program is measured by savings in solid waste collection and disposal costs. The Village will need to aggressively manage its solid waste collection contract, especially during any bidding process, to insure that savings realized by their contractor due to decreased quantities of solid waste being collected are passed onto the village through lower pricing.

- Opportunities exist for the Village to become a regional recycling center. Careful management of these opportunities could result in savings for the Village due to lower processing costs, better utilization of equipment (and contribution towards their equipment replacement fund), and further improvements in markets due to higher volumes.

3: Delta Solid Waste Management Authority

The Delta Solid Waste Management Authority (DSWMA) program achieved start-up during the fourth quarter of 1992 when the MRF renovations were completed and full scale operation of some of the collection programs began.

a: Program Design

Consistent with the CMC Implementation Plan recommendations, mandatory weekly curbside recycling is now in place of the residential sector in the County and yard waste collection and processing programs are underway. Once final decisions regarding use of co-collection technologies were made in the out-county areas and the two cities, no significant changes to overall program design were made during the final specification and implementation of the Delta CMC project. However, indecision regarding collection technologies did delay program implementation by many months.

Table 10: Start-Up Schedule — Delta County

Program	Start-Up Date	
Distribute Curbside Recycling Bins	• Gladstone	August 1992
	• Escanaba	August 1992
	• Out-county	September 1992
Curbside Recycling Collection Start up	• Gladstone	September 1992
	• Escanaba	March 1993
	• Out-county	October 1992
Recycling Processing	• County-wide	October 1992
Home Compost Bins	• 950 purchased	February 1992
	• Workshop/distrib.	February 1992

On-call brush chipping services have generally been put on hold in favor of less costly self-haul to the processing sites.

b: Equipment

The recycling collection system represented a significant challenge for the Delta program. The result is an innovative co-collection approach for both Escanaba and Gladstone as well as the out-county area - a program that provides curbside recycling services to nearly all residents of the County. The decisions to proceed in this direction and which trucks to select were difficult ones that took a long time to resolve.

Table 11: Budgeted and Actual Equipment Expenditures — Delta County

Program	CMC Vehicle Budget	Current Acquisitions
Escanaba	1 manual side load	2 co-collection G&H Trucks
Gladstone	1 manual side load	1 co-collection Oshkosh Truck
Out-county	3 co-collection 1 used rear packer	2 co-collection Oshkosh Trucks No Purchase of Packer Truck

MRF design and renovation could not be delayed, however, and later modifications were required to fit the tipping requirements of the vehicles finally selected. The success of curbside recycling has resulted in some delays in start-up of the drop-off depot program.

Table 12: Highlights & Difficulties — Delta County Recycling Programs

Recycling Component	Highlights or Difficulties
Program Start-Up - Curbside	• The long process required to obtain support for adoption of the CMC program resulted in significant delays in procurement and implementation of the recommended programs. • Escanaba and Gladstone's decision to implement co-collection systems after the planning phase had already ended resulted in even more implementation delays and logistical problems in coordinating MRF design changes.
Co-Collection Vehicles	• Cart dumper was underbuilt; swing arm assembly cracking • Some refuse dumpsters could not be serviced with new co-collection vehicles (too wide) • Dump bins need to be lined with sheet metal for easier unloading • Proximity switch control for recycling bins was affected by cold and needed to be enclosed
Processing Facility Design and Operation	• Cost estimates for the final list of desired building modifications were higher than expected resulting in significant changes to CMC budget to accommodate some of the renovation costs and additional design work to refine the construction specifications. • An addition was constructed so unloading with both types of collection vehicles could be done under cover • Delays in determining curbside collection system put added pressure, costs on processing • Indecision regarding location and operator of MRF delayed program

Implementation of the yard waste collection and composting operations has proceeded on a parallel track with the recycling programs. As noted on the following chart, only minor problems have developed such as difficulties getting water piped into the Gladstone site, delays in fabrication of the windrow turner and higher quotes than estimated for the equipment storage building at the Escanaba compost site.

Table 13: Highlights & Difficulties — Delta County Yard Waste Programs

Yard Waste Component	Highlights or Difficulties
Program Start-Up - Curbside	• MDNR accepts Delta County Board of Commissioners and DSWMA policy statement rather than requiring all communities to implement yard waste disposal and burn bans • Gladstone and DSWMA reach agreement to allow Out County residents to use the Gladstone Compost Facility • Tub-grinder purchased for Lakestates Industries with outside source of funds making tub-grinder CMC capital funds available for other yard waste and MRF capital projects.
Processing Facility Design and Operation	• Gladstone site does not have water yet. Installed signs and fencing for drop off site. Graded new area for windrows. • Escanaba owns tub grinder and homemade windrow turner • Authority intends to purchase a compost screener for use at both sites • Residents must de-bag at drop-off, but some bags get left for crews to remove • Lakestates Industries tub grinder available on rental basis to Gladstone and out-county communities
Yard Waste Reduction Program	• All 950 home units distributed via workshops, CMC presentations, and distribution programs. • Demonstrations on composting given at the Upper Peninsula State Fair in Escanaba

c: Participation and Diversion Rates

The total number of units (residential and ICI combined) currently served by the various Delta County recycling programs is estimated to be 12,223. This level of participation is less than anticipated in the CMC Plan. The difference is largely due to the late start-up of the depot program which (starting in the summer of 1993) is expected to service about 2,340 households.

The number of ICI locations currently participating in recycling programs is significantly greater than originally anticipated. During the planning process, 18 units were expected to participate in the CMC program; current estimates indicate the number of ICI participants to be 390. One reason for this growth is the use of the co-collection vehicles, which make recycling of OCC and other materials convenient for the collection staff as they provide the standard solid waste pickup for all ICI generators.

The participation rate (the number of households which recycle at least once per month) is estimated to be 75% in Escanaba. The participation rate in Gladstone is estimated to be 85%. Escanaba Pickup Service (EPS), servicing part of the out-county area has an 80% participation rate with their customers.

In order to compare actual recovery rates to the original estimates, the first seven months of actual program data (the only actual program data available) for the City of Gladstone were used to project per household recovery levels. Projected annual recovery rates (pounds per unit per year) were lower than recovery rates projected by the CMC Implementation Plan for all materials except OCC. The overall projected recovery rate of 242.5 pounds per household per year was 20% lower than the Plan's projected recovery rate. When OCC recovery was excluded, the annual rate was projected to be be. nearly 40% lower, at 175.6 versus 290 pounds per household per year.

Recovery rates for yard waste are even more difficult to project due to limited data being available. However, preliminary results appear to demonstrate that recovery goals are achievable.

Table 14: Planned vs. Actual Yard Waste Recovery Rates — Delta County

Program	Actual Recovery (7 Months)	Pro-Rated Annual Recovery (unit/yr.)	Pro-Rated Annual Recovery (cy and tons)	CMC Plan Annual Recovery (tons/yr.)	CMC Plan Annual Recovery (lbs/unit/yr.)
Escanaba (cy)	4,070 cy	1.15 cy	6,980 cy	1,805	730 lbs
Gladstone (tons)	163 tons	283 lbs	280 tons	743	831 lbs

Comparison of the data collected to actual CMC Implementation Plan estimates is difficult due to the lack of information on participation rates by City residents versus out-county residents that may be using either one of the sites. Using a density of 400 pounds per cy for Escanaba results in an estimate that 1,396 tons of yard waste was recovered, compared to the projected 1,805 tons. The data for Gladstone allows a more direct comparison of the pro-rated 280 ton estimate to the CMC Implementation Plan estimate of 743 tons. In both instances actual program tonnages are significantly lower than the Plan estimates.

Table 15: Collection Operating Costs — Delta County

Operating Cost Item	Pro-Rated Annual Cost Estimate (Recycling & Refuse)	Prior Year Collection Costs (Refuse Only)	CMC Plan Annual Cost Estimate (Recycling Only)
Escanaba Operating Costs	$240,400	$224,000	$69,318
Gladstone Operating Costs	$101,900	$115,900	$33,373
Out-county Operating Costs	$70,740	n.a.	$33,305

Combining refuse collection and recycling collection requires a different approach to analysis of costs. The above chart shows how the co-collection approach (first column of costs figures) provides a recycling service at lower combined costs for both the ongoing refuse collection service under the old system (second column of cost figures) and the new separate vehicle recycling service (third column). Adding cost columns two and three for both Escanaba and Gladstone results in higher costs under a separate collection approach.

For the out-county area a comparison can only be made on an annual cost/household basis as shown in the following chart.

Table 16: Collection Service Cost Comparison — Delta County

Annual Cost/Household for Co-collection	$144
Prior Year Cost/Household for Refuse Collection	$129
Net Cost Increase/Household/Year	$15

The cost of $15 per household per year for the very convenient curbside service provided to rural households represents a significant new option for inexpensive recycling service delivery to rural areas.

MRF operating costs are documented in the following table which shows that annual cost estimates based on the pro-rating of 7 months of data provide for an estimated budget that is 39% higher than the original CMC Implementation Plan with most of this increase coming in the equipment replacement cost line item that is $60,000 higher than the Plan. This also reflects a projected annual cost of $106,000 for service contract fees that was not budgeted in the original CMC Plan cost estimate.

Table 17: Processing Operating Costs — Delta County

Processing Operating Costs	
CMC Implementation Plan Budget	$154,721
Actual 7 Month Cost Data	$107,113
Pro-Rated Annual Cost Estimate	$215,462
% Difference	+39%

Despite the successful track record of Lakestates Industries with marketing of recycled materials, there still are challenges with movement of recyclables at good prices from the middle of Michigan's Upper Peninsula. Material collected by the Delta CMC program has been successfully marketed at competitive prices with exceptional performance in fibers (OCC, ONP, OMG, etc.) which comprise the bulk of materials actually collected. Actual revenues for PET are also markedly higher $166.70 per ton, or 75% higher than CMC Implementation Plan estimates. The principal weak point in markets are in HDPE (clear and colored) and glass, where actual revenues range from $4.80 per ton (clear glass) to $162 per ton (colored HDPE) lower than CMC estimates.

e: Additional Strengths/Weaknesses/Problems

There are three strengths of the Delta CMC approach that can be highlighted.

- The innovative divided compartment co-collection approach, if managed properly, could be a major success factor in providing affordable but highly convenient recycling to all residents - including those in low density rural areas.

- Lakestates Industries, with strong recycling experience and the ability to provide jobs to disable workers at little or no cost to the recycling program, will prove to be a major asset to the long-term sustainability of the program.

- The authority governance structure has proved to be an important tool for decision making and project management as well as a financing mechanism for both additional capital and operating cost expenditures.

Challenges that need to be managed by the Delta CMC project in order to insure long-term program success include:

- Significant troubleshooting will continue to be required to support the decision to use the divided compartment co-collection approach. While municipal decision makers were attracted by the prospects of a single pass-by collection system, the expectations for either of the two trucks that were selected will continue to be unmet in small ways. An example being the limited capability to service the conventional six yard dumpsters so common in commercial refuse pickup, or the compartment size that was too small to accept the shredded computer printout that now is being landfilled after being recycled for many years under the old system. These problems will continue to demand further innovation in order to find appropriate solutions.

- Strong and coordinated promotion and education efforts will be an important part of this effort to increase participation and capture rates for specific materials.

- Continuous improvement in collection and processing operations will be needed to lower operating costs over time.

4: Isabella County

The Isabella County program achieved start-up during April of 1993 when the MRF was completed and full scale collection programs implemented.

a: Program Design

Per the CMC Implementation Plan mandatory curbside recycling is now in place in the City of Mt. Pleasant and the drop-off recycling system is being phased in across the County. No significant changes have taken place in program design although specific components of the MRF design have been modified as part of the final design and procurement process. In addition, the planned yard waste collection system has eliminated grass as an item approved for collection in order to encourage use of mulching mowers and back yard composting.

Table 18: Program Start-Up Schedule — Isabella County

Program	Start-Up Date
Distribute Curbside Recycling Bins	March 1993
Recycling Depots	January 1992
Curbside Recycling Collection Start up	April 1993
Recycling Processing	April 1993
Yard Waste Land Application	May 1991
Home Compost Bins and Workshops	1000 purchased/obtained 1992 Distribution began August 1992

Table 19: Highlights & Difficulties — Isabella Implementation

Component	Highlights or Difficulties
Program Start-up	• A long process required to obtain support for the CMC Implementation Plan resulted in significant implementation delays. Turnover in key staff at the County during this period further contributed to the delays in approval.
Processing Facility Design	• Pre-qualification of MRF equipment vendors assists in final design of MRF container sort lines • Final design requirements for MRF result in change in MRF footprint and detailed reassessment of construction costs in order to remain within original MRF capital budget. Construction bid documents provided for bid alternates to allow County decision-makers room for cost cutting if needed. • Resistance to yard waste burn ban in Out County area leads to delay in completing CMC Implementation Plan
Yard Waste	• Environmental constraints emerge at existing yard waste composting site, requiring reassessment of options with final decision made to use land application approach. • Land application of Mt. Pleasant yard waste begins successfully in 1991.

The design process also required bidding of operating contracts for the MRF and curbside recycling services. Waste Management, Inc. has become a major service provider to the Isabella County CMC program after successfully competing for those contracts to operate the MRF and to provide the curbside recycling service in the City of Mt. Pleasant. The recycling drop-off program, originally intended for private operation as well, continues to be operated by the County as it has in the past with expectations of significant cost savings over the contracting option, as described later in this section.

b: Equipment

Equipment issues centered primarily on the MRF procurement and the lift truck for the drop-off program. The curbside recycling vehicle did not have any major problems. Implementation of the multi-family program is the responsibility of the private haulers in the County as directed by ordinance and no reporting on equipment problems has been provided.

Table 20: Highlights & Difficulties — Isabella Recycling Programs

Recycling Component	Highlights & Difficulties
Curbside Vehicle	• No significant problems although truck was painted wrong color when delivered - later corrected by supplier. Minor problems have been experienced with the brake system taking too long to disengage during the frequent stop/start pattern of a typical route. Two sided collection capabilities have increased collection efficiency for the program
Drop-off Lift Vehicle	• Problems were experienced due to an undersized capacity rating of the front axle. This occurred because the vehicle and the lifting mechanism were bid as separate components within the same bid package without sufficient coordination by the consulting team. The chassis was subsequently modified to upgrade the axle rating and no further problems have been reported.
Drop-off Containers	• Some problems experienced with the dumping of materials in the multiple compartment drop-off containers in which lighter weight materials fail to trip the swinging dividers, due to ONP being wedged into gaps around the dividers. There is also some overlap interference with the container lids.

Processing Facility Design and Operation	• Recommended footprint of MRF modified as final equipment lines were developed and upgraded to County requirements. • Equipment suppliers were required to pre-qualify their systems to facilitate final equipment line design. • Office space enlarged to accommodate both County and Vendor staff. • Height of concrete slope in yard waste drop-off area reduced significantly in size during the construction bidding process to reduce costs. • Final start-up of facility delayed due to insufficient water pressure to feed the fire suppression system. Problem was corrected through combination of new water lines. • MRF operational in April 1993, immediately exceeded initial volume projections, but handled the volume with only minor operational difficulties. • County staff indicated more time for MRF shake-down and start-up would have helped facilitate a smoother transition period for the program. • MRF operator has indicated that the fiber sorting line should have been longer and that the container tipping area should have been larger. Some modifications have already been made to the container line incline conveyor. • The first six months of operation have resulted in some problems with contaminants lodging in the glass conveyor drive mechanism, resulting in belt tearing.

The yard waste collection and processing systems did not experience any significant equipment difficulties during implementation.

Table 21: Highlights & Difficulties — Isabella Yard Waste Programs

Yard Waste Component	Highlights or Difficulties
Yard Waste collection	• Over 500 home composting bins distributed in 1992; additional workshops to educate and sell bins continue in 1993. • Mt. Pleasant discontinued collection of yard waste starting in January 1993. • Shepherd continues collection and windrow composting of village leaves in the fall.
Land Application	• Leaves, grass and woodchips taken to contracted farm operator since 1991. No problems reported by neighbors. No results yet available regarding benefits to soil and crops. • Yard wastes accepted at drop off/grinding facility at MRF site starting April 1993.

c: Participation and Diversion Rates

The City of Mt. Pleasant contracts with WMI for the curbside collection operation and allows the contractor to use the County vehicle. Collection is done 4 days per week, although the CMC plan anticipated a 5 day per week schedule. For the first month of the program, due to the quantity of materials set-out and the 4 rather than 5 day collection system, WMI used two collection vehicles each staffed with one driver and one loader. Currently, the collection operation requires only one vehicle as set-out rates have levelled off.

Two materials (old magazines and boxboard) were added by the County to the list of targeted recyclables in order to continue recycling the same materials that their existing program had processed. Materials are set out at curbside in three streams:

1) OCC, boxboard and kraft bags,

2) container materials

3) ONP, OMG

During April 1993, (the first month of operation) 71.25 tons of recyclables were delivered to the MRF from the City of Mt. Pleasant curbside program. The original CMC plan estimated about 50 tons per month would be recovered, although the two additional material types are collected now which were not anticipated during the CMC plan development. In May 1993 the curbside program quantities delivered to the MRF had already dropped to 59.83 tons. When pro-rated over twelve months, the program can be expected to reach a recovery level of 786 tons compared to the CMC Implementation Plan estimate of 602 tons.

Depots accounted for all recycling activity documented during calendar year 1992 as shown in the following chart. The table shows that the actual recovery was almost double the CMC Implementation Plan estimate. However it should be noted that curbside recycling services were not being offered at the time, which would result in higher recovery levels at the depots. The depot system is also collecting additional materials (OCC, boxboard and office paper) which were not anticipated in the original projections.

Table 22: Actual vs. Projected Recyclables Recovery — Isabella County

Actual Recovery (tons)	2,051
CMC Projected Recovery (tons)	1,046
% Difference	+96%
Actual Recovery Rate (lbs/hh/yr)	280
CMC Projected Recovery Rate (lbs/hh/yr)	144
% Difference	+94%

The impact of curbside service being provided is seen in the following chart which documents monthly tonnages at the MRF since it opened. In 1992 the average monthly tonnage through the depot system was 171 tons while the April/May MRF results show that the depot system now brings in approximately 65 to 70 tons per month.

The City of Mt. Pleasant was serviced by a depot before residents began receiving curbside collection service. Additionally, small commercial customers were calculated in the 1992 Depot program volumes, but are now better accounted for at MRF due in part to the fact that no municipal collection route service exists for commercial customers in 1993.

Table 23: MRF Recovery Tonnages — Isabella County

Program	April 1993	May 1993	Total Tons Pro-Rated for Year
Waste Management	134	133	1,626
Mt. Pleasant - Curbside Program	71	60	786
Isabella County - Depot Program	67	68	804
Central Michigan University	46	28	444
Other	19	62	486
Total Tons	340	351	4,146

Although only operating since April, the initial performance of the MRF is very positive, expected to handle about 4,146 tons this year compared to the CMC Implementation Plan Projection of 3,176 tons per year. The majority of this tonnage is expected to arrive in a commingled fiber form (1,490 tons/yr) and as OCC (1,100 tons/yr) or ONP (772 tons/yr). The addition of magazines to the program has also increased volumes. Commingled containers make up the last large group at an estimated 619 tons/yr. The contract with Waste Management has been key to these high volumes - with some of that material coming in from outside of the County.

For yard waste the table below compares the tonnage of material collected and the equivalent pounds recovered per housing unit.

Table 24: Actual vs. Projected Yard Waste Recovery — Isabella County

Material	Actual 1992 Recovery for Mt. Pleasant only (tons per year)	Actual Recovery (lbs/unit/year)	CMC Plan Projected Annual Recovery (lbs/unit/year)
Leaves	2,303 tons	1,071.1	540.4
Grass	484.5 tons	225.3	950.7
Brush	88.6 tons	41.2	324.0
Total	2,876.1 tons	1,337.7	1,815.1

When comparing the CMC plan estimated *annual* recovery of yard waste per unit with the actual amount recovered during 1992 the following observations can be made:

- the actual recovery level per household for all yard wastes combined is roughly 75% of the estimated total;
- the level of recovery for leaves is nearly twice as high as the estimated figure;
- for grass, the actual recovery is less than one-quarter of the estimated total;
- brush recovery in 1992 was about half the estimated annual figure.

There are several possible explanations for the difference in the actual amounts of yard waste recovered relative to the CMC plan. First, Mt. Pleasant's leaf collection program is free and requires only that leaves be raked into the street - providing no incentive for back yard composting - resulting in higher leaf recovery through the bulk (raked to the curb) collection program. The fee for chipping services, and the increased fee for bagged collection of other yard debris in 1992, and the eventual elimination of any grass collection in 1993 combined with the emphasis on home composting and mulching may have caused residents to reduce set out of all other yard wastes.

d: Program Efficiency

The contracted price for curbside collection in Mt. Pleasant was $70,920 per year but does not include several key expenses, including fuel, maintenance and capital replacement charges. The true cost of the Mt. Pleasant curbside program is likely to range between $77,000 and $82,000 per year. On a per household basis, the cost of this program is about $23/household/year compared to a CMC projected price of about $13/household/year. This actual cost figure is on the high side of the market for contracted curbside recycling services and could probably be lowered through municipal operation of the program.

The decision to retain municipal operation of the depot services was made after seeking bids from private firms. The County was able to easily lower its costs through continued public sector management. The reported cost of the depot collection program is approximately one-third the CMC budget estimate. As a result, actual annual costs were $13,328, or 70% lower than CMC Implementation Plan estimates. These costs are equal to $6.50 per ton or $0.92 per household, a savings of approximately 72% per household. The reason for this difference is due to several factors.

- Some itemized costs such as insurance, license and capital replacement have not yet been accounted.
- The CMC budget included cost items which are not relevant to the current situation. For example, the CMC Implementation Plan assumed that a private firm would be operating the program and therefore included a contractor mark-up cost item.

Cost efficiencies in the MRF operation are not so easy to document. Under the arrangements with WMI, the MRF operator, the operating cost of the MRF is paid by the County as a direct charge of $62/ton. The cost of shipping materials is also added to this charge. WMI also pays a tip fee of $35/ton for any materials it delivers to the facility from its own customers. Revenues from the sale of material are also added into the cost accounting.

The City, County and CMU then cover, through their intergovernmental agreement, any remaining costs after accounting for all revenues. This arrangement dictates that all parties will assume a share of the operating deficit which is to be apportioned on the basis of the amount of material each community delivers to the MRF (for Isabella County the amount of material collected in the depot program; for Mt. Pleasant, the amount of material collected in its curbside program). In addition to this cost, both governments assume an additional surcharge of $15.50/ton which is paid into a capital replacement fund.

There is a large discrepancy between the actual operating cost of the MRF (as calculated for the first two months of operation) and the 1991 CMC Implementation Plan forecast. Calculations based on two months of operating experience indicate that the MRF operation under the current agreement will result in net costs of $22.74 per ton for the participating public agencies. The CMC Implementation Plan projected a gross operating cost of $66/ton. When revenues were taken into account, the net operating cost was projected to be $40/ton. At the present time it is not possible to state whether or not this cost profile will continue in the future although there are early indications that a downward trend from the already lower costs is developing.

Current per ton market prices for the MRF were competitive compared with CMC plan projections, demonstrating the ability of a well designed and managed processing facility to market recyclables at competitive prices and the value of having an ongoing recycling program where a reputation for delivering contaminant-free materials was already well established with regional end-markets. For ONP, green glass, and metal cans, actual per ton prices ranged from $2 higher (green glass) to $20 higher (metal cans) than CMC estimates. Actual per ton prices paid for clear glass, brown glass, and natural HDPE were lower than CMC estimates, ranging from $1 lower (brown glass) to $46 lower (natural HDPE).

Analysis of the revenue stream indicates that $150,000 could be received in the first year of operation because of the higher than anticipated market prices and quantities, - more than 60% higher than the projected $88,524 in the CMC plan.

e: Additional Strengths/Weaknesses/Problems

Three strengths of the Isabella County program merit some discussion.

- The City of Mt. Pleasant and Central Michigan University represent the largest potential customers of the MRF. Their participation in the governance of the CMC recycling programs through the MRF Governing Board has already been a strength and will continue to be one during the initial years of operation.

- The public/private partnership with Waste Management, Inc. for MRF operation further contributes to the potential success of the CMC project. WMI, as the largest and most dominant hauler in the region, will be able to deliver their own commercial recyclables to the MRF, which should help keep operating costs low and diversion levels high.

- The fact that landfill disposal options are all long distance has historically provided an incentive for area recycling and this will continue to be the case, even with the recent approval of WMI's landfill in Clare County 33 miles to the north of Isabella County.

These strengths provide some important opportunities for the Isabella County CMC program to reach the highest diversion levels of any of the CMC communities. Success in pursuit of those opportunities will require attention to the following:

- The MRF, despite being an advanced commingled recyclables separation facility, is not configured to process large quantities of commercial recyclables with high residue levels, the kind of loads most likely to be delivered as commercial recycling efforts get more serious. Continued attention should be paid to refinement of the MRF design through modifications as needed to facilitate processing of commercial recyclables with high residue levels.

- Multi-family recycling will be an important part of the overall CMC program due to the significant numbers of this type of housing in and around Central Michigan University. Implementation of those programs should be a top priority of the MRF Governing Board.

5: Lansing

The Lansing program achieved start-up during the the Fall of 1991 when marketing arrangements for recyclables were made and full scale collection programs implemented.

a: Program Design

Although the CMC program design did not change significantly prior to start-up, the timing of that roll-out experienced many difficulties. During the initial six months of implementation, issues centered on program-financing the recycling facility and curbside collection truck design. Two factors led to a difficult program roll-out:

- The collection service start up date was too close to the expected delivery date of the trucks. When one of the manufacturers failed to deliver vehicles on-time the City was left with no choice but to proceed without the necessary truck capacity required to service the City's 9-route system. Along with a large backlog of recyclables set out by residents, the delay in truck delivery resulted in significant overtime and some missed pickups.

A problem with procurement of collection vehicles occurred when the truck specification was expanded to a point that price quotes exceeded the CMC grant budget. Two types of recycling collection vehicles were eventually purchased. The City chose two types of vehicles for two reasons: 1) the company with the low bid (National) had not produced an automated lift truck with any operational experience; and 2) neither manufacturer could deliver the 9 required vehicles specified in time for a November start-up. The company from which 5 hydraulic lift vehicles were ordered (National) delivered the vehicles 1-2 months after start-up, and continuing mechanical problems have been experienced. That company is no longer in business. The other supplier (Frink) delivered four chain-link vehicles in time for the November 15 start-up.

- The start-up date preceded the availability of the recycling transfer facility and consequently, the trucks hauled material directly to two different local processors, where weighing for each item was required. This added somewhat to truck route time but did not significantly affect operations since each truck needed to tip only once per day.

Because of these barriers, Lansing weathered a very difficult initial start-up that included 12 to 16 hour days for some of the truck drivers, public education challenges and equipment shortcomings. Program operation improved significantly following achievement of full fleet capacity in January of 1992 and later the opening of the recycling transfer facility in April of 1992.

Major implementation difficulties during the November 1991 start-up had to do with confusion by residents concerning when service would begin Collection start-up was slated for November 1991, which was six months later than was required in the ballot initiative approved by Lansing voters in 1990. As a result, the City was reluctant to delay the start-up any further despite the potential for problems in acquiring the trucks in time.

In addition, the educational program was complicated by the considerable controversy raised by the per household fee funding mechanism. Residents were angered that they had to pay the fee in July, at the start of the fiscal year, before curbside collection was commenced. This anger could not be mitigated with informational materials, since the CMC education and promotion materials were not targeted for distribution until the following September. The City's public relations would have been helped if educational efforts had been rolled out in advance of the fee's impact on residents.

Despite these difficulties, the City of Lansing is now operating a mandatory, once per week curbside collection service for recyclable materials for all single family households as proposed in the CMC plan. Recyclables are sorted at the curb by the vehicle operator and are taken to the City-owned and operated transfer station, which is used to temporarily store separated material in preparation for shipment to processors, brokers and end-markets. No material processing is undertaken at the transfer station. Glossy magazines, catalogues and aluminum were added to the curbside collection service in April 1993.

After an equally challenging administrative process, Lansing's multi-family recycling program is now being implemented. The program, which is operated completely by the private sector, is triggered by an ordinance that places responsibility for development of the recycling services on the multi-family property manager and their selected hauler. A fair amount of opposition and a lack of understanding of the program's details resulted in several revisions of the ordinance language, and a great deal of dialogue between a special City Council committee, building landlords, local haulers and City staff to gain support for eventual implementation in June 1993.

As well, regular pickup of yard waste during the growing season is provided to all single family residents. The City has developed a compost processing system through contract with a local service vendor who also is expected to provide compost processing services to commercial yard waste generators as well.

b: Equipment

Lansing, the first of the CMC communities to roll out its recycling program under the CMC grant, has experienced a number of setbacks and successes which may serve as lessons to the other CMC projects as well as other Michigan communities.

Recycling Collection Equipment

The City acquired the following collection vehicles:

Table 25: Budgeted and Actual Vehicle Expenditures — Lansing

CMC Vehicle Budget	Current Acquisitions
11 over-the-top side load vehicles	6 Carrier/Frink over-the-top chain lift 5 National hydraulic over-the-top
2 of these to be dual side load over-the-top vehicles	2 of the Frink vehicles are equipped with dual side over-the-top chain lift
1 pick-up truck	1 Ford 4 ton pick-up truck 1 GM 4 ton pickup truck with dump box

Lansing officials report that the Carrier/Frink recycling vehicles are generally performing well, with only minor equipment operating problems or difficulties experienced.

The National vehicles have required more extensive modifications, as outlined below:

- Deflectors were installed in the rear corners of National's collection boxes so to prevent newspaper from jamming in the corners during the tipping process.
- Hand throttles on two vehicles must be pulled up in order to dump the loading hopper. Operators tend to leave throttles in the accelerated position all day, thereby increasing fuel consumption.

- Lansing identified a number of items which have required maintenance attention: the box cylinder and low controls; automatic throttle advance for the side hopper and plastic compactor operation; the rear door locking mechanism; the larger hydraulic pumps; and partition alignment.

It was believed that problems encountered with the National recycling truck resulted from the lack of the company's engineering experience in manufacturing more than a prototype automated collection truck. The first truck, delivered a month late, was used as a basis for determining operational defects for the final manufacture of the four subsequent vehicles.

Problems with some of the curbside collection vehicles was a major hindrance to smooth start-up, as well as a number of quality control problems associated with residents placing the wrong or improperly prepared materials at the curb. Well-trained drivers and a good communication system were able to overcome these difficulties, however.

Table 26: Highlights & Difficulties — Lansing Recycling Programs

Recycling Component	Highlights or Difficulties
Program Start-Up - Curbside	• Controversy in administering $55 fee to cover costs • Late truck delivery and mechanical problems with new truck design • Confusion of residents on start-up date; stockpiling of recyclables • Excellent quality control efforts
Transfer Facility Design and operation	• Site contamination had to be addressed prior to construction • Incline of roll-off pits was too steep; pits too narrow • Local markets for materials have been accessible • Indoor parking area for curbside trucks has been a plus

Yard Waste Collection and Processing

Yard waste collection start-up occurred in September 1991 with a temporary contract for local yard waste processing, mostly due to delays in finalizing an RFP and long-term contract for a privately-operated compost facility. The City purchased three new yard waste collection vehicles (conventional side-loading packer bodies) for the expanded collection operation under the CMC program.

Table 27: Highlights & Difficulties — Lansing Yard Waste Programs

Yard Waste Component	Highlights or Difficulties
Program Start-Up - Curbside	• Lansing continues to allow plastic bagging of yard waste, not wanting to ask residents to change habits. • CMC-based collection program begins in Fall 1991, with contract for "model site" initiated in July 1992. • Volumes collected are considerably lower than estimated in CMC plan.
Processing Facility Design and Operation	• RFP for private contractor received three good responses. • Chosen vendor started local operation 9 months before RFP. • Vendor's Willibald processing technology has no U.S. track record, but good reports from Europe. Site equipment includes batch-feed grinder, turner, and leased screener. • Trapezoidal pile system increases volume capacity per acre. • Some initial odor problems due to ponding and complications in operating on an unhardened pad surface. • Plastic bags are not de-bagged at front-end; small plastic pieces remain in the finished compost despite screening.

c: Participation and Diversion Rates

During the first three months of collection, the City received more than 1,000 tons of recyclables. Tons collected per week peaked at 234 during the first week, dropping to 103.9 in week four, and fell off to an average of 63.2 tons per week by the February 1992 the fourth month of operation.

In twelve months of operation during 1992 a total of 3,429 tons of recyclable material was recovered. The following table illustrates current quantities collected by material type. The second column shows the estimated annual level of recovery by pro-rating these figures to a twelve month period. The third column shows the CMC plan recovery forecast for each material.

Table 28: Actual vs. Projected Recyclables Recovery — Lansing

Material	Actual 1992 Recovery (tons)	CMC Plan Projected Recovery (tons)
ONP	2,318	5,779
Clear Glass	569	1,051
Green Glass	72	315
Brown Glass	40	210
Metal Cans	262	420
Clear HDPE	125	168
Colored HDPE	43	84
Total	3,429	8,027

The data shows that the actual annual recovery is significantly lower (57%) than anticipated in the CMC Plan. Accordingly, actual estimated material recovery rates for curbside households were significantly lower as well. Recovery rates for all materials were lower than projected, resulting in an actual estimated recovery rate of 178 pounds per household per year, approximately 53% lower than the CMC Implementation Plan estimated recovery rate of 382 pounds per household per year.

There are three possible circumstances which could explain why the actual recovery estimates are lower than CMC plan projections.

- The program's promotion and education activities may not have been maximized during the initial start-up period. It is clear from the problems and delays encountered during the start-up period that residents may have been confused about the program and could now benefit from renewed promotion. Greater involvement of volunteer block captains could help boost participation, however, lack of city staff to maintain a high level of oversight of this program makes it difficult stay in touch with and encourage volunteers.

- A significant number of Lansing residents use Granger and WMI cart services for their refuse collection instead of the City's volume-based refuse bag collection system, and as a result, do not have an incentive to use the City's curbside recycling services. Many private hauler customers contend they do not have to use the City's services.

- Lansing has a relatively low level of owner occupancy (between 50 and 55%). Many landlords report to the City that they have trouble getting their tenants to regularly put out the trash, much less participate in recycling programs. Special education efforts must be targeted at this group.

Current recovery rates suggest that it would be worthwhile to verify the contributing reasons and attempt to improve the rates as much as possible. It has been recommended that the City undertake a current measurement of its participation rate and perform a representative sampling of residential single family refuse to determine the quantity and type of designated recyclables still remaining in the refuse. These data will identify if the low recovery results from a drop in participation or whether residents are participating but just not recycling the majority of the designated recyclables. Corrective steps (such as a targeted promotional educational campaign) can then be designed to improve recovery performance.

Nine months of data on Lansing's yard waste collection program (April through December 1992) reveal that the recovery rate, as well as the equivalent tonnages for curbside collection and drop-off activities, was 217.4 pounds per unit per year (based on 4,000 tons collected), or 84% lower than CMC Implementation Plan annual recovery estimates.

The actual projected level of recovery is roughly one-sixth of the CMC estimated total. There are several possible explanations for the low level of recovery relative to the CMC plan:

- Lansing's program is still new.
- Enforcement regarding yard waste separation has not yet been initiated.
- Grass mulching and home composting options have been promoted in the Lansing urban area for several years now.
- The number of single family households reported in the CMC Plan was over 4,000, according to the Lansing Recycling Coordinator. This may have resulted in yard waste recovery estimates which were too high.
- The average lot size in Lansing may be much smaller than those of other cities with a resulting lower generation of yard waste materials.
- CMC generic yard waste brochure was not ready for adaptation by the City.
- Promotion and educational efforts may have been incomplete, particularly in reaching residents who do not use the City's refuse collection services. For example, yard waste collection guidelines are normally distributed as part of a City of Lansing refuse bag insert - obviously missing all those residents that use a private hauler instead of the City's refuse collection service.

Lansing could take two steps to determine how much yard waste is not being collected in the current system. The first would be a survey of residents to determine the level of backyard composting and mulching. It is already apparent that many citizens are interested in this approach, as indicated by the strong participation in the Master Composter training courses. The second step would be spot checking of trash bags and carts to determine the level of yard waste occurring in the refuse disposal system.

d: Program Efficiency

Operating costs for the recycling program are described in the following table. The table also shows the pro-rated annual cost estimate so that the current performance can be compared with CMC plan estimates.

Table 29: Collection Operating Costs for Lansing

Collection Operating Costs	
CMC Implementation Plan Budget	$980,282
Actual Expenditures to Date (first 6 months)	$419,122
Projected Annual Cost Estimate	$838,244
% Difference	-14%

Compared to the CMC plan forecast, the pro-rated annual cost estimate appears to be 14% lower than expected. However, it is important to note that the CMC plan was based on operating nine trucks five days/week and servicing 42,207 households, whereas the current program services 38,674 households with eight vehicles.

On a per household served basis, the pro-rated cost estimate of $21.68/hh/year compares favorably with other well-managed recycling programs and the CMC plan forecast of $23.33.

On a per ton collected basis, the pro-rated estimate is significantly higher than the CMC forecast. The $243/ton collected figure is higher than most efficient programs as well as the CMC projections. Given that the household cost figure falls within industry standards, the high cost/ton figure is primarily due to low household recovery rates.

As indicated earlier these low household recovery rates require that action be taken to improve the focus of education, incentive and regulatory systems to insure that household participation is increased. Specifically this will require:

- Augmenting education and promotion efforts with block leaders, special materials for non-English speaking populations and targeted education through landlords for the transient renter households.

- Insuring that all households have an incentive to recycle, including those households with private refuse service who use curb carts between 90 and 110 gallons (in size in contrast to the incentive promoted by the City's volume based refuse bag fees).

- Consideration of an enforcement program for the mandatory recycling ordinance targeted at residents that may not want to make the extra effort to recycle.

Operating costs during a six-month period for the recycling transfer station were $71,043, resulting in a pro-rated annual cost estimate of $142,086. The pro-rated annual cost of the transfer station compares favorably with the CMC plan forecasts, with the cost difference being only 4%. However, on a per ton processed basis, the pro-rated estimate is three times greater than the CMC because of low throughput.

The following table also shows the combined recycling and transfer station pro-rated annual cost estimates so that the current performance can be compared with CMC plan estimates.

Table 30: Actual vs. Estimated Recycling/Transfer Station Costs — Lansing

Item	Actual Costs (six month period)	Pro-Rated Annual Cost Estimate	CMC Plan Annual Cost Estimate
Recycling Collection	$419,122	$838,244	$980,282
Transfer Station	71,043	142,086	137,270
Sub-Total Operating Costs	**$490,165**	**$980,330**	**$1,117,552**
Revenue	-17,166	-34,332	-90,660
Net Operating Costs	**$472,999**	**$945,998**	**$1,026,892**
No HHs Served		38,667	42,027
Cost/HH/Year		$24.47	$24.43
Tons Collected		3,456	8,027
Cost/Ton Collected		$274	$128

When the costs of collection and transfer station operation are combined, the pro-rated operating cost of the recycling system is about 8% less than estimated in the CMC plan. On a per household basis, the pro-rated cost estimate is almost identical to the CMC plan. However on per ton basis, the pro-rated estimate is more than two times greater than the CMC forecast. As noted before, the high cost per ton figure is due to low recovery rates.

The annual net revenue was $35,791, approximately 61% lower than the projected annual net revenue of $90,660 as outlined in the CMC Implementation Plan.

Two factors contribute to this discrepancy: lower than expected recovery and lower market prices for the product materials. There was a dramatic drop in plastic market prices (over 50%) primarily in response to increased plant capacity for virgin resin. In addition the Great Lakes area market for HDPE moved to separation of natural and colored HDPE rather than mixing of these two grades as was the case during the initial CMC market research. As a result, actual prices paid per ton for natural HDPE were as low as $20 per ton (including baling costs of $0.05 per pound), or $100 lower than CMC Implementation Plan estimates. Market demand for colored HDPE was also depressed, so much so that $20 to 40 per ton was paid to have the plastic taken, a difference of up to $160 per ton from the CMC Implementation Plan estimates in which markets were expected to pay $120 per ton for colored HDPE.

The only market which has remained relatively stable during the past two years is the metal can market. In most cases, anticipated prices in the CMC plan are higher than the current price paid for unprocessed material. This situation, coupled with the lower quantities of recyclables recovered, resulted in low actual figures.

e: Additional Strengths/Weaknesses/Problems

There are a number of strengths of the Lansing CMC program that should be highlighted.

- The City continues to hold a position of significant leverage as the largest generator of residential recyclables and yard waste in the area. Its contracting power and processing decisions will have a major impact on the recycling service marketplace in the region.

- The staff and administrative resources of the City allow it to both develop service capabilities as it has and fully document the financial and recovery performance of those services - as it has.

- The City's ability to establish goals and service requirements through ordinance, as it has for multi-family complexes, is a very powerful mechanism for development of commercial recycling capabilities as well.

The infrastructure that is in place through both CMC and City funds is significant, yet a number of problems must be surmounted before the program will be able to reach maturity.

- The low tonnages reported for 1992 for both the recycling and yard waste programs must be thoroughly investigated, understood, and corrective actions taken. These steps are needed to achieve competitive costs per ton necessary for long-term program viability.

- The implementation of nearly every facet of the City's program has been filled with political in-fighting, encouraged by private sector haulers. All programs have legitimate implementation issues that are worthy of debate. However, it appears that the track record here gives the general public the impression that the program does not have broad bipartisan and private sector support. This must be corrected if the general public is to be expected to participate fully.

- Often this type of disparity emerges because one sector has not been asked to shoulder its fair share of a recycling goal. This is presently the case for the commercial sector in Lansing. Although some recycling activity is taking place in the commercial sector, it is not at a level of effort that parallels that of the residential sector programs. Lansing's residential recycling and composting budget requirements prevented the CMC funds from being targeted at commercial recycling initiatives. They are, however, important to the overall success of the CMC-funded initiatives, both in terms of economic performance as well as total diversion of solid waste from landfill disposal.

- New 1993 market agreements resulted in higher prices for each material. The City estimates a 70% increase in revenue (over $60,000). If this trend does not continue, Lansing should revisit the economic analysis that resulted in the original decision not to install recycling equipment capable of separating commingled recyclables and preparing them for market at competitive prices. The facility with the vehicle storage area could be upgraded with this equipment resulting in lower collection costs, easier recovery of more types of recyclables and increased flexibility in marketing recyclables directly to mills and manufacturers at the going market prices - which are significantly higher than those currently being received. A private operator of the facility could still be contracted in order to better leverage private sector expertise in MRF operations.

6: The Southeast Oakland County Resource Recovery Authority (SOCRRA)

The SOCRRA program achieved start-up during the late Fall of 1992 when the MRF was completed and began servicing collection programs that had already come on-line earlier in the year.

a: Program Design

SOCRRA's recommended recycling program represents the largest scale effort of any of the CMC communities. Per the CMC Implementation Plan recommendations a full service MRF is now located adjacent to the existing solid waste transfer facility operated by SOCRRA and is processing recyclables collected from each member municipality. The MRF is also beginning to process corrugated cardboard removed from mixed waste loads tipped at the transfer facility.

Although it is the largest CMC processing project, the SOCRRA MRF did get off to a quick start on design and procurement. Due to the hard work of SOCRRA staff, any design issues that had to be addressed were quickly resolved. This resulted in a bid process that was very well-timed to receive competitive prices, and nearly $700,000 dollars were saved from the planned budget. Some construction problems delayed a planned June 1992 start-up until September/October 1992.

Table 31: Start-Up Schedule — SOCRRA Programs

Program	Start-Up Date
Curbside Recycling Collection	Staggered (late 1991 to present)
Recycling Processing	September 1992
Trommel Screen for Yard Waste Transfer	Began operating May 1992
Pad Construction at Composting Facility	60% completed by October 1992

b: Equipment

Equipment problems have been encountered in two areas, the paper sort line of the recycling facility and the trommel de-bagger for yard waste at the Transfer Station. The paper sort line lacked sufficient workstations to sort contaminants from the ONP after SOCRRA determined that it wanted to pursue a higher market grade for ONP than originally planned. Additional workstations were also needed to allow SOCRRA to begin processing both old magazines and phone books which they wanted to include in the incoming paper stream. Modifications were made after MRF start-up in order to allow this additional sorting activity.

Table 32: Highlights & Difficulties — SOCRRA Recycling Programs

	Highlights or Difficulties
Program Start-Up - Curbside	• Choice of curbsort over MRF-sort worked well • Delay in opening of MRF created logistical challenges at transfer station for handling recyclables delivered by early curbside start-ups.
Processing Facility Design and Operation	• Paper sort line too short; needed more sorter stations • Market prices for paper higher than expected • Operating costs (labor) higher than projected

The trommel screen at the Transfer Station had been installed to de-bag yard waste collected in plastics bags. The bagged material had been an operational problem at the compost site and removal at the transfer station was viewed as part of a solution that would allow the compost site to stay at its current location. The de-bagging trommel, however, experienced problems passing larger leaves (oak, maple) and thick branchy materials. The rollers on which the trommel rested were prone to breakage, resulting in downtime in excess of 50%. These rollers have been replaced, while modifications will be made to the trommel to address the other problems.

At this time SOCRRA is moving to reduce the amount of bagged material accepted and is strongly considering a ban on plastic bagged yard waste.

Table 33: Highlights & Difficulties — SOCRRA Yard Waste Programs

Yard Waste Component	Highlights or Difficulties
Program Start-Up - Curbside	• Communities continue to allow plastic bagging • Trommel screen at transfer station broken down 50% of time
Processing Facility Design and Operation	• Relocation of windrow pad from dirt-covered hill to flat area with engineered pad improves operation greatly. • Cost of engineered pad reduced through creative design and materials procurement approach. • Transition plan for pad construction while composting • Legal dispute with local community over existence and operation of facility continues • Odor problems tackled on multiple fronts: tip fee structure, community grass quotas, yard waste reduction education.

Development of the engineered pad was the key design issue that made upgrading the existing compost facility location possible. Costs for the pad could have been very burdensome which would have forced SOCRRA to examine other sites. Instead, Authority staff worked with its consultant to optimize the total cut and fill requirements in an effort to minimize need for new material while still achieving slopes of 1.5% to 3% across the site. The most significant cost savings, though, were achieved by using a compacted slag material as the surface treatment, and phasing in the site improvements to allow access of low cost below grade fill when it was available from area construction projects.

c: Participation and Diversion Rates

The projected actual recovery, based on data collected between October 1992 and April 1993, was 17,516 tons per year or 25% lower than the CMC Implementation Plan projected annual recovery. On a pounds-per-household basis, the actual recovery rate of 309.9 pounds per household per year was 14% lower than the CMC Implementation Plan projected recovery rate of 359 pounds per household per year. There are a number of factors which could explain this difference, including:

- First, the extrapolation of data from winter months to an annual average may significantly understate actual recovery to be achieved during the spring and summer seasons. Newspaper recovery is, for example, typically lowest during January and February.

- Second, the anticipated recovery rates identified in the CMC Implementation Plan reflect levels achieved by long-standing and well-managed programs. Over time, it is expected that these rates can be achieved if the SOCRRA program is managed and promoted effectively.

Yard waste tonnage for 1992 and the pounds per household recovery levels closely tracked the CMC plan projections. The actual recovery rate for yard waste of 730 pounds per unit per year was less than 1% lower than the CMC Implementation Plan estimated annual recovery rate. Accordingly, actual annual recovery of 47,696 tons was only 2% lower than the CMC Implementation Plan estimated annual recovery in tons.

When comparing the CMC Implementation Plan estimated *annual* recovery per unit with the actual amount recovered during fall collection of leaves, observations can be made that:

- the level of recovery for leaves is consistent with the CMC Implementation Plan estimate.

- the level of recovery for grass is lower than expected.

- the level of brush is less than half estimated.

There are several possible explanations for the levels of recovery relative to the CMC plan:

- concerted efforts to educate residents about grass cycling were a critical factor in reducing grass volumes despite the fact that the summer of 1992 was extremely wet and cool, conditions that are normally conducive to grass growth.

- Many communities have been chipping brush at the curb and leaving chips for the resident, reducing their need for delivery of any material to the compost site.

d: Program Efficiency

As shown in the following table, SOCRRA has succeeded in achieving a very cost effective level of operation for the MRF. The table summarizes 7 months of actual data, pro-rates that to an annual cost estimate and compares that figure to the CMC Implementation Plan estimates.

The results show comparable cost figures for such items as wages, salaries and benefits especially given the lower tonnage processed in the first months of operation (an annual estimate of 18,806 tons against an planned 24,409 tons.

Most significant are the lower residue disposal costs as a result of a lower than projected residue level (1-2% compared to a planned 5%). This can be attributed to excellent education and attention to the curbsort tasks as well as careful operation of the MRF with re-running of contaminated streams through the system again instead of immediate disposal.

Also significant are a number of cost items that are not being fully funded, either due to cost absorption by other SOCRRA programs (insurance), low demand due to new equipment (maintenance) or policy choices (equipment replacement).

Note that SOCRRA has chosen to return a significant amount of money back to each community in the form of a tip fee credit as an incentive to recycle. These costs go into the budget as an operating expense.

Table 34: MRF Operating Costs for SOCRRA

MRF Operating Costs	
CMC Implementation Plan Budget	$608,100
Actual Expenditures to Date (first 7 months)	$358,721
Projected Annual Cost Estimate	$614,950
% Difference	+1%

Finally, SOCRRA is benefitting from newly established relationships with end markets - and an early reputation as a provider of quality, contaminant free recyclables. Market prices are significantly higher than projected for fibers (ONP, OMG, kraft bags and OCC). Market prices for other materials, including light-cut colored HDPE (white, yellow, and other light colors) and milk jugs; dark-cut colored HDPE (red, blue, orange); and all colors of glass were lower than CMC Implementation Plan estimates. The discrepancies between actual market price obtained and CMC Implementation Plan estimates ranged from $6.00 per ton lower (green glass) to $82.10 per ton lower (dark-cut colored HDPE).

The range of material collected is far greater than anticipated in the original CMC Implementation Plan. The difference between the 1991 CMC plan and current prices is a general reflection of market adjustments which have taken place over the last two years.

The following table shows that actual twelve month operating costs of the SOCRRA compost site are were approximately $592,700, or 32% less than projected in the 1991 CMC Implementation Plan.

Table 35: Compost Site Operating Costs for SOCRRA

Compost Site Operating Costs	
CMC Implementation Plan Budget	$870,504
Actual Annual Cost	$592,700
% Difference	-32%

There are several factors which may account for this cost difference, including the following.

- Labor costs are lower than projected in the 1991 CMC plan since the compost site currently uses 3 to 4 FTE compared to a budgeted 6.75 FTE and since some landscaping work is completed by staff whose wages fall under the Water Authority budget.

- The CMC Implementation Plan anticipated residue disposal cost of $146,456. However, the compost site does not pay for the disposal of residue as the compost site is located adjacent to the SOCRRA-owned landfill and SOCRRA does not charge itself for the use of its own landfill.

e: Additional Strengths/Weaknesses/Problems

The following strengths can be highlighted:

- SOCRRA has a strong base of operational experience that has been applied to the MRF. This experience has manifested in labor arrangements with local unions that provide jobs at reasonable hourly rates; in business arrangements with participating municipalities that provide an incentive to recycle; and in marketing arrangements and general operational philosophy more closely aligned with a private sector business venture than would ordinarily be seen in a public sector operation. This balance has provided reasonably high quality recycling services at affordable prices for SOCRRA membership.

- Control of transfer station and landfill options for the member communities provides SOCRRA with additional tools to encourage strong recycling and yard waste recovery.

- The Authority's recycling committee and involved board provide a strong base for coordinating the broad development tasks that are part of a comprehensive material recovery operation. These groups have been invaluable in start-up of the curbside programs and the yard waste collection and reduction efforts.

Even with these strengths, there are issues and opportunities that must be addressed in order for SOCRRA to continue full development of its material recovery strategy. These include:

- Operations at the MRF will continue to develop. While initial results are promising, the MRF is capable of doing much more than it is currently processing. Full scale operation will require even more detailed management of material flow, costs and marketing. Fully integrating multi-family collections as well as commercial recycling activity from the transfer station will require this level of management attention.

- Once the MRF operation is ready for this scale-up, the Authority is in a position to use its policy making capabilities along with its members ordinance authority to further encourage multi-family and commercial recycling activity. While some of this recycling activity is likely to be directed to other processing facilities, enough will end up on SOCRRA MRF tip floors to provide an opportunity to further improve MRF cost structures and economy of scale benefits.

- The Authority has made an exceptional investment in its yard waste processing system. However the long-term viability of the site continues to be threatened by disputes with the City of Rochester Hills over zoning issues and a perceived odor problem.

- Advanced recycling systems are emerging across the country that target diversion levels of 50% or greater through recycling and composting. SOCRRA is in a position to benefit from such innovation. Doing so, however, will require a careful reassessment of its strengths as an Authority, the physical capabilities and constraints of its program base, and the threats and opportunities of the solid waste marketplace that it operates in. Adept management of these forces will strengthen the existing recovery efforts and continue to improve service quality and costs to its member municipalities.

II: Overall Program and Program Component Evaluation and Comparison

A: Comparing Key Program Features by Community

In this section the six CMC programs will be compared more directly in order to highlight differences and similarities between the different communities. Following are a series of comparative charts with comparative analytical comments on:

- Community Framework
  - Institutional/Political
  - Legal
  - Financing
- Recycling Collection and Processing
- Yard Waste Collection and Processing
- Yard Waste Reduction
- Education/Information/Promotion, including Solid Waste Reduction

The conclusions drawn in this section may also serve as lessons to other communities interested in developing similar programs.

1: Community Framework

As would be expected, there is a large range in capabilities between the community types with regards to the institutional/political, legal and financial framework which the CMC program recommendations were built upon.

i: Institutional/Political

The institutional and political elements of each CMC community are were important aspects of their ability to move forward on a project that is as administratively and technically demanding as the CMC program. The following chart summarizes key institutional/political characteristics by community.

Community	Institutional/Political Features
City of Buchanan	• Strong Citizen/Leadership Support • Active Citizen Committee • Insufficient Administrative Staff • Centralized Management • Membership in Solid Waste Authority
Village of Caseville	• A "Working" Recycling Committee • Lack of internal technical expertise • New administrative structures needed
Delta Solid Waste Management Authority	• Authority structure incorporates all institutional, political and administrative input to satisfy area needs • Control of waste flow within County supports program
Isabella County	• Strong public works/engineering skill base in major partners for project (City of Mt. Pleasant, CMU and County) • BPW structure provides some support but not as many tools as authority structure • MRF Governing Board and the intergovernmental agreement that it functions under has become an important implementation decision forum
City of Lansing	• Strong public service department focus • Union labor force • Council committee structure • Full administrative capability but some shortages of administrative staff during peak implementation periods • Citizen ballot referendum requiring service to be provided by City crews
Southeast Oakland County Resource Recovery Authority	• Authority structure incorporates all institutional, political and administrative input to satisfy area needs • Long track record of public ownership and operation of solid waste management facilities and programs • All necessary institutional and political mechanisms in place • Recycling Committee formed to assist in securing grant and w/implementation decisions • Involved and knowledgeable board made up of City Administrators

Based on the experience of the Consulting Team in working with the institutional and political structures of the six CMC communities, the following observations can be made.

- The use of an advisory committee in some form or another with participation of citizens, staff, elected officials, business interests and recyclers was common across almost all of the communities. These committees assisted in advising on important policy issues, helped the program stay on track, and in some cases resolved difficult conflicts in program implementation.

- In each community there were no shortage of opinions on just exactly what should be done to address various program design or implementation issues. Decision making went more smoothly when this range of opinion was able to be channelled through advisory committees (even if the opinions were those of the elected officials). If such opinions were solicited early in the process, there was greater opportunity to respond to the issue and the concerns in the development of the CMC Implementation Plan.

- Smaller communities were administratively challenged to keep up with the logistical, technical and managerial demands of program design and implementation. Larger communities or smaller communities that formed intergovernmental partnerships were able to more easily manage these demands.

- The use of technical expertise, whether on staff, secured through neighboring governments, retained as consultants, or volunteered from the community was essential to program design and implementation. Communities that already had made arrangements for that assistance (beyond those resources provided by the CMC project) or who knew when to seek that assistance were able to quickly move through more difficult issues.

- It was apparent through some parts of the design process in particular communities that the "will" to implement had not yet reached critical mass. In those communities the project approval process faltered or was put on hold until the necessary consensus on moving forward was achieved. Typically this involved changes in the program to accommodate various concerns in an effort to build ownership among key decision makers. Despite these barriers it is important to note that each project did indeed get implemented, even though there were times when as many as half the communities were thought to be nearing a "no go" decision.

ii: Legal

The legal tools available to each CMC community were instrumental in their ability to effectively structure their project, especially in response to the CMC program requirements for mandatory recycling ordinances, etc. The following chart summarizes key legal characteristics by community.

Community	Legal Features
City of Buchanan	• Strong institutional, political and administrative mechanism to quickly implement all necessary ordinances, rules and regulations
Village of Caseville	• Institutional, political and administrative mechanism in place to implement necessary ordinances, rules and regulations
Delta Solid Waste Management Authority	• Control of landfill allows use of solid waste policies at Authority level instead of ordinances at local community level • Ability of Authority to contract also useful
Isabella County	• Attempt to use an untested County-wide ordinance approach for mandatory recycling and possible for the yard waste disposal and burn ban as well • Lack of in-county landfill or transfer station limited ability of county to implement bans and related policies that could support program
City of Lansing	• Full municipal ordinance capabilities • Use of landlords and commercial property owner mandates to implement required multi-family and business recycling programs
Southeast Oakland County Resource Recovery Authority	• Established system of using Authority policies, rules and regulations to enforce required program structure • Members accustomed to adopting supporting ordinances and implementing necessary community specific programs

Based on the experience of the Consulting Team in working with the legal tools available to each of the six CMC communities, the following observations can be made.

- Individual communities have the strongest legal structure for implementation of the necessary policies, ordinances, rules, regulations and contracts that were required for their CMC projects.

- When communities worked together through various intergovernmental organizational arrangements, the authority structure appeared to provide the most adaptable legal framework for coordination of the the necessary policies, ordinances, rules, regulations and contracts that were required for their CMC projects. This is probably due to the fact that each of the three CMC projects that involved authorities (SOCRRA, DSWMA and Buchanan's membership in an authority) all had publicly-owned and operated facilities, which provided a focal point for implementing policies, rules, regulations and contracts. These essentially served as effective substitutes for the ordinance making role that these organizations lacked.

- The County structure (Isabella) appears to be the most uncertain legal framework for implementation since the powers of counties in solid waste management are not clearly articulated in Michigan state law, despite the authorization provided to counties by P.A. 641 of 1978. For example, ordinance making powers are not clearly established by state law with regards to solid waste. Again, ownership of solid waste facilities helps overcome this uncertainty, but Isabella did not enjoy this situation, having closed its landfill a number of years prior to the CMC project. These difficulties force those relying on the County structure for implementation to be creative in use of contracts and in coordination of ordinance and rules use with the major individual units of government within the county's jurisdiction. As a result, a formal intergovernmental structure proved more successful from a legal standpoint.

iii: Financing

Access to and experience with a range of available financing tools are important indicators of each of the CMC communities' success in securing the necessary resources required to implement the CMC project. The following chart summarizes key financing characteristics by community.

Community	Financing Features
City of Buchanan	• Established mechanisms in place to provide for operational funding through the general fund
Village of Caseville	• Some mechanisms in place for funding program (general fund) but preferred system required setting up a new fee collection program which was put in place after lengthy debate and negotiations
Delta Solid Waste Management Authority	• Authority mechanism helpful in funding MRF capital and operational expenses • Still must rely on local community for collection program costs and for decentralized yard waste processing system • Innovative use of private sector refuse subscription fees in funding recycling for rural areas
Isabella County	• Initial plans were to integrate transfer station with MRF project with possible use of a solid waste surcharge as a funding mechanism • Shared cost model eventually used with all participants also becoming members of the MRF Governing Board • Tip fees from all other MRF users provides additional revenue stream
City of Lansing	• Voter approved environmental bond provided some capital for project • Lack of full control over refuse service funding prevented its use to cover recycling and yard waste composting operating costs • User fee mechanism finally selected • Political compromise resulted in provisions for exemptions to those households that can prove that they only use drop-off facilities and/or compost yard waste
Southeast Oakland County Resource Recovery Authority	• Established system for allocating costs for services easily adapted for use in funding both MRF processing and compost processing costs • Member units used to making balance of program funding decisions on their own including financing of collection programs through public service or private sector contracting approaches

Based on the experience of the Consulting Team in working with the financing tools available to each of the six CMC communities, the following observations can be made.

- Funding and finance options are numerous as evidenced by the fact that each of the CMC communities arrived at their own unique package. No two are exactly alike.

- The most effective programs used a "portfolio" of financing mechanisms. Lansing, for example, used a mix of bond financing, general fund monies, and the new user fee system, with an exemption for residents that demonstrated that they use an alternate service.

- Having an established budgeting and cost allocation system was always beneficial in quickly addressing the funding and finance question, even if the eventual solution used a new cost allocation approach. First, the experience with a system helps in understanding how a new system can and should be set up and what its most desirable features are. Second, the existing system serves as a fall back if a better approach can't be found.

- Creating a new funding and finance system from scratch proved to be an intimidating task that was always pursued very cautiously, even if the actual logistics of the new system were not very complex.

- Those projects with integrated solid waste management programs, operating both landfill and recycling projects, were able to utilize surcharge mechanisms on solid waste to fund recycling.

- In the rush to solve the question of sourcing operating funds, the question of whether appropriate incentives to recycle were provided for was not always thoroughly explored. The mandatory participation requirements certainly lessen the need to have clear economic incentives to recycle (such as volume based fees on solid waste) but most studies confirm that such incentives are clearly valuable in reinforcing recycling behavior even under mandatory participation requirements.

- It is to early in the implementation phase to evaluate whether economic incentives, or their absence, correlate to the levels of participation and diversion that are being achieved.

- Finally, the difficulty that each community had in addressing the issue of financing operating costs is a strong indication of the complexity of the financing issue, despite the fact that the CMC program covered most if not all capital costs and provided significant technical assistance through the Consulting Team. Clearly financing is a major task and challenge for recycling and composting program implementation in any community, with or without grants.

2: Recycling Collection and Processing

The following chart summarizes key recycling collection and processing system characteristics by community.

Community	Recycling Features
City of Buchanan	• Weekly curbside recycling services for single family households • Weekly multi-family recycling services • Weekly commercial recycling services • Limited curbsort and delivery to publicly-owned and operated MRF at Landfill Authority site. • Commercial recycling ordinance
Village of Caseville	• Weekly curbside recycling services for single family households • Weekly multi-family recycling services • Weekly ICI recycling services • Full curbsort and delivery to publicly-owned and privately operated recycling facility at DPW yard • Recycling depots for tourists
Delta Solid Waste Management Authority	• Weekly curbside recycling services for all households in both urban and rural areas through co-collection approach • Weekly multi-family recycling services • Weekly bar and restaurant container recycling services • Limited curbsort and delivery to publicly-owned and private non-profit operated recycling facility on Authority-owned land • Limited recycling drop-off services
Isabella County	• Weekly curbside recycling services for all households w/1-3 units in urban areas • Private sector required through ordinance to provide recycling services to multi-family and to businesses. • Reliance on extensive drop-off system for rural areas • Two stream commingled approach (fiber and containers) with delivery to publicly-owned and privately operated recycling facility
City of Lansing	• Weekly curbside recycling services for all households w/1-4 units • Property owners required through ordinance to provide on-site recycling services to multi-family complexes through private haulers • Curbsort approach with delivery to publicly-owned and publicly operated recycling transfer facility • City delivers materials to local private sector companies for processing and marketing
Southeast Oakland County Resource Recovery Authority	• Weekly curbside recycling services for all households w/1-4 units • Multi-family complexes provided with recycling services either by municipality or through ordinance • Some ICI recovery through the solid waste transfer station • Curbsort approach with delivery to publicly-owned and publicly operated MRF

Based on the experience of the Consulting Team in working with each of the six CMC communities in design and development of these recycling collection and processing programs, the following observations can be made.

- Despite a significant amount of discussion and analysis, weekly curbside has been adopted as a sort of program benchmark for each community.

- All programs are designed to maximize convenience to the generator by allowing material to be set out at the curb in some type of commingled form.

- Collection programs can vary significantly in degree of commingling from curb to MRF. Some, like Caseville and Lansing, rely completely on curbsorting due to lack of commingled processing capability either in the private sector or in a CMC-funded MRF. SOCRRA relies on curbsorting but allows some commingling where mechanical separation at the MRF is simple (magnetic removal of cans from plastic). Isabella relies on a full two stream commingled approach (fibers and containers). Even small communities like Buchanan and Delta show some commingling of easy to separate streams.

- Access to suitable processing facilities are an important part of any recycling program. The CMC communities varied significantly in their arrangement for processing, but relied on a proactive approach in most cases in order to guarantee access to markets.

- In all cases material is being successfully marketed even when volumes are small (Caseville) and the points of generation are remote (Delta).

- The least favorable market prices are being experienced when the CMC community does not have the equipment to prepare material to end-market specification (Lansing). The strongest market price arrangements are being experienced when the CMC community has large volumes and has a full service MRF capable of being a quality supplier of recyclables to end markets (SOCRRA and Isabella).

- Significant private sector and public sector employment opportunities are created through the provision of recycling services. Three of the six CMC communities have some level of involvement of the private sector in curbside or multi-family collection of recyclables. The other three have public sector staffing. Three of the six recycling facilities are operated by private contractors. Lansing contracts with private processors and end markets but has a publicly operated recycling transfer facility. Buchanan and SOCRRA have authority staff operating their facilities. In some cases the new jobs offered a means for shifting employees away from solid waste programs that were or would soon become overstaffed as greater amounts of recyclables were diverted away.

- Comprehensive collection service serving all market segments (single, multi, and ICI) are being pursued in almost all of the CMC projects although the two largest (Lansing and SOCRRA) minimized this component of their strategy since private sector activity was already strong. Multi-family and ICI will take longer to implement but are important sources of recyclable material.

3: Yard Waste Collection and Processing

The following chart summarizes key yard waste collection and processing system characteristics by community.

Community	Yard Waste Composting Features
City of Buchanan	• Fall leaf collection • On-call brush chipping service at curb • Grass collection - but discouraged • Drop-off at compost site • Windrow composting at landfill site
Village of Caseville	• Fall and spring leaf collection • On-call brush chipping service at curb • Drop-off at MRF/DPW site • Land application of yard waste on farm fields
Delta Solid Waste Management Authority	• Fall leaf collection • On-call brush chipping service at curb • Drop-off at compost site • Windrow composting/publicly-owned sites
Isabella County	• Collection of yard waste during growing season (leaves in fall and grass during rest of service period) • On-call brush chipping service at curb in Mt. Pleasant • Drop-off at MRF site for delivery to compost site • Land application on nearby farm fields with some stockpiling and windrowing during summer and fall.
City of Lansing	• Collection of yard waste during growing season (leaves in fall and brush/grass during rest of service period). • Plastic bags allowed • Composting (single large trapezoid shaped pile) at private sector compost facility w/City as main customer
Southeast Oakland County Resource Recovery Authority	• Collection of yard waste during growing season (leaves in fall and grass during rest of service period) • Plastic bags (biodegradable only initially and now clear bags only) allowed • Delivery to SOCRRA transfer station for de-bagging (if necessary) and bulk transfer to compost site • Windrow composting at publicly-owned and operated compost facility

Based on the experience of the Consulting Team in working with each of the six CMC communities in design and development of these yard waste collection and processing programs, the following observations can be made.

- Curbside collection of yard waste during the growing season is a relatively simple program to implement yet opportunities exist for reducing costs and municipal service requirements through elimination of grass clipping collection even in larger communities (Isabella).

- Fall start-ups are recommended over spring so that sufficient high carbon leaf material can be accumulated to mix with the high nitrogen material (grass) from spring and summer collections to control odors in both municipal and backyard composting operations.
- Plastic bags continue to be a problem for compost projects. Their convenience and established market share makes managers reluctant to investigate banning their use, yet the problems they create at compost sites continue to be an operational and fiscal challenge.
- Kraft bags are working, yet expense still is an issue. Bulk collection with containers should always be encouraged along with source reduction.
- Although results are still preliminary, land application even on a larger scale (Isabella) appears to be a viable low cost option for a community yard waste management strategy.
- Land application does require stockpiling, especially during wet weather and the growing season.
- Well run composting and brush chipping operations are able to find end-uses for the products - often among their own citizens and municipal departments of public works or parks.

4: Yard Waste Reduction

The following chart summarizes key yard waste reduction characteristics by community.

Community	Yard Waste Reduction Features
City of Buchanan	• Grass collection de-emphasized, mulching mowers to be distributed • Backyard composting bins distributed
Village of Caseville	• Grass collection not provided • Backyard composting bins distributed
Delta Solid Waste Management Authority	• Grass collection not provided • Backyard composting bins distributed
Isabella County	• Grass collection initially provided but not encouraged and then eliminated altogether in Mt. Pleasant • Backyard composting bins distributed
City of Lansing	• Grass mulching encouraged through education • Master composting classes offered/some bins distributed
Southeast Oakland County Resource Recovery Authority	• Extensive grass "cycling" education effort and movement in recent months to a grass maximum volume "quota" for each participating municipality. • Backyard composting bins distributed and extensive backyard composting education effort

Based on the experience of the Consulting Team in working with each of the six CMC communities in design and development of these yard waste reduction programs, the following observations can be made.

- Source reduction through grass cycling and mulching (Buchanan) and backyard composting are effective tools for yard waste management programs adaptable to every CMC community.

- Some communities are now aggressively discouraging collection of grass under any circumstances (Caseville) or placing quota's on grass collection (SOCRRA). The value of these techniques continue to grow.

- Citizens show strong interest in backyard composting units and appear to use them.

5: Education/Information/Promotion and Solid Waste Reduction

The chart on the following page summarizes key education/information/promotion characteristics by community, including efforts aimed at participation in collection programs and source reduction.

Based on the experience of the Consulting Team in working with each of the six CMC communities in design and development of these programs, the following observations can be made.

- Education and promotion of recycling and composting requires skill, attention to detail and close coordination with program implementation. An effective response to this challenge requires building the right team, often through contracting for special assistance or hiring specialized staff as well as coordination of efforts with volunteers and other supporting organizations.

- Advisory committees provide an effective forum for coordination of education and promotion efforts and for building broader community support.

- Shortcomings in education and promotion efforts appeared to negatively impact participation rates, although more analysis is needed. These problems, where they surfaced, can generally be traced to:

    - Lack of staff dedicated to outreach and education,
    - Insufficient consideration to timing as a key to success of education and promotion strategies,
    - Limited budget resources beyond the CMC grant-eligible items,
    - Competing pressures for staff time and attention during start-up and follow-up, and
    - Lack of in-house expertise regarding effective promotional techniques.

- Overall, the generic materials offered ready-to-use promotion solutions which proved effective for the CMC community planners who were charged with implementing outreach efforts while at the same time overseeing collection and processing operations. More statewide coordination of distribution and adaptation would have helped communities, however.

Community	Educational/Promotional Features
City of Buchanan	• No additional staff yet dedicated for education and promotion efforts although half time effort originally planned; volunteer efforts have been useful
Village of Caseville	• Half-time recycling coordinator duties include outreach • Challenge of reaching seasonal residents and tourists complicate ongoing outreach program
Delta Solid Waste Management Authority	• Outreach efforts contracted out entirely to regional planning agency • Extensive use of generic CMC materials • Comprehensive outreach efforts covered schools, businesses, residents through presentations, workshops, publications and media outreach
Isabella County	• Existing County staff (under contract) had school and recycling outreach program in place; additional CMC funding for publications and other promotional materials provided a boost for creating greater visual image for county program • Use of video, publications, special events, school programs and other methods has provided a range of outreach messages • Special outreach and training effort to local Native American Reservation will promote new recycling collection opportunities there
City of Lansing	• Recycling coordinator devoted half-time to outreach; contract staff provides training and publicity support • Multi-media outreach effort for recycling • Emphasis on training and demonstrations for yard waste reduction education, including semi-annual Master Composter courses
Southeast Oakland County Resource Recovery Authority	• Authority provided successful general recycling promotion effort • Strong yard waste reduction education campaign • Individual community members responsible for promoting specific collection programs • Authority is operating school and business outreach efforts • Waste prevention messages promoted through waste reduction guide, and special poster distribution

- Waste reduction education efforts have generally received little attention but most CMC communities are ready for more extensive efforts now that initial start-up tasks are behind them.

B: COMPARATIVE COMMUNITY EVALUATIONS

In this section the comparison of programs by community will be extended to some of the key outcomes of the CMC program with regard to program design implementation, equipment selection, participation and diversion rates and program efficiency.

The following chart summarizes key program design implementation issues by community.

Community	Program Design Issues
City of Buchanan	• No significant changes in program design during implementation. Start-up for most services delayed until November through December of 1992 when the MRF was completed
Village of Caseville	• Yard waste program has gone through greatest amount of change as service levels are adjusted to higher volumes of material and greater impact of seasonal resident yard waste management practices • Commercial collection of recyclables has also been fine tuned to meet the more frequent service needs of the larger generators of recyclables • Start-up for most services delayed until November 1992 through January of 1993 when the MRF was completed and private contractor was selected. Drop-offs delayed until beginning of tourist season
Delta Solid Waste Management Authority	• General direction of program design did not change but selection of co-collection trucks over more drop-off sites and recycling only trucks did have significant impact on both schedule and functional requirements for the MRF. • A total of five co-collection trucks were finally ordered instead of the three proposed in the plan (and none in earlier drafts of the plan) • MRF design has had to be upgraded to deal with co-collection trucks and to provide greater capabilities than originally planned for • Most services have been brought on-line during September and October of 1992 when the MRF modifications were completed although Escanaba curbside did not start until March 1993
Isabella County	• MRF design went through significant changes during implementation with more office space added and the overall dimensions reconfigured to provide for more interior maneuvering room in MRF • Start-up for drop-off services and yard waste program proceeded first in late 1991 since existing program was already in place and processing capacity under old arrangements was still available • Most other services delayed until April of 1993 when the MRF was completed and private contractor was selected • Multi-family implementation provided for through ordinance requirements on private haulers
City of Lansing	• Significant changes in program design did not occur, however, program roll-out was rushed in November 1991 with confusion over start-up date, insufficient promotion, and late truck delivery • Multi-family implementation has been difficult due to opposition from local hauler
Southeast Oakland County Resource Recovery Authority	• No significant changes in the program design • Actual MRF start-up delayed until September of 1992, but curbside programs started up continually throughout the last half of 1992, resulting in material handling problems at the transfer station under the old system

Based on the experience of the Consulting Team in working with each of the six CMC communities in design and implementation of these programs, the following observations can be made.

- Each CMC program went through an extensive program planning and design period that, in total, lasted more than 12 months. The Implementation Plans proved to be effective tools for establishing program design. The binding contractual commitment made by each community, with reference to their Implementation Plan, appeared to focus community attention on enough of the key program design issues that later problems, while present, were not disastrous. Considering the number of program design issues that were presented for each CMC project, the level of changes made after approval of implementation plans appears to be insignificant. This was, however, partially the result of fairly strict adherence to the Implementation Plans by MDNR program managers, with requested changes to those plans reviewed thoroughly and in some cases rejected as unnecessary or inconsistent with the intent of the Plan.

- Some of the changes in program design can be attributed to emerging technical solutions in the commercial marketplace that were more responsive to a community's needs. The best case in point here is the Delta County shift to co-collection vehicles for all programs, well after the adoption of the CMC plan.

- Other changes can be attributed to a common phenomenon in all busy public sector agencies. Attention to detail is often not given until a project is "really going to happen — soon." What appeared to be an acceptable floor plan suddenly is lacking once more careful review is completed. Needs that had not been anticipated surface just as equipment bids are coming in. These types of changes are probably unavoidable although comments made earlier about encouraging broader participation by interested parties and decision makers earlier in the process will help in reducing these types of problems.

- Although the total budget (i.e.: the CMC-funded budget) for each community needed to be kept at a fixed dollar amount, the implementation of programs was helped by a flexible approach to shifting funds within budget categories. Many of the communities pushed for savings in certain purchases in anticipation of buying more capability in other areas. In most cases this shifting of funds resulted in greater expenditures on the recycling processing facilities as the communities sought to upgrade balers and other features of their processing lines. In many cases, the CMC capital budget reports show significant amounts of project money in the education/promotion materials budgets that have yet to be expended, reflecting the lack of staff time and attention to this in many of the programs.

- In almost all cases, processing facilities are already becoming significant recycling resources in the larger regions that they will be able to serve. Once the initial CMC collection programs are in place, each of the facilities will probably begin receiving material from other sources, which should effectively reduce overall costs to the CMC community.

The following chart summarizes key equipment selection issues by community.

Community	Equipment Selection Issues
City of Buchanan	• Kahn collection vehicle works well but difficulty w/access in downtown alleys • Storage problem for baled materials at MRF, solved through use of adjacent utility space in landfill buildings • Other minor improvements to MRF design to improve fire suppression, sorting on inclined fiber conveyor and natural lighting of building interior
Village of Caseville	• Kahn collection vehicle works well but difficulty w/access in narrow streets • Facility working as planned • Leaf loader not working as planned - leaf vacuum would have been more flexible w/lower maintenance • Brush chipper has worked well • Land application has been relatively trouble-free although some stockpiling is occurring and increases in contaminants have been documented
Delta Solid Waste Management Authority	• Co-collection trucks have experienced a variety of problems requiring on-site modifications in some cases and return to vendor in others. • Capabilities of co-collection vehicles also resulted in restrictions such as inability to service conventional 6 cy dumpsters and to accept large bundles of recyclable paper • Switch to co-collection trucks required further modifications to processing facility to handle material tipping requirements • Sharing of Lakestates Industry tub-grinder has resulted in eliminating need to purchase additional tub-grinder and allowed purchase of a leaf loader and further modifications to the MRF
Isabella County	• Recycling curbside vehicle working well although a truck that provided for two-sided collection would be even better. Drop-off lift vehicle was delivered with undersized capacity rating on front axle which had to be corrected. • A number of changes to the MRF and MRF equipment were completed both during the final design and construction bidding as well as during construction. Even more tipping and maneuvering space would be desirable.
City of Lansing	• Significant problems experienced with late recycling truck delivery and manufacturer's new truck design and maintenance problems. • Minor problems experienced with angle of inclined roll-off pits at recycling transfer station; material unloading and transfer working well • Yard waste collection and processing has gone smoothly except that reliance on plastic bags is beginning to create problems with quality of finished compost
Southeast Oakland County Resource Recovery Authority	• The paper sorting system, as originally designed, lacked sufficient length and numbers of work stations to adequately service the fiber sorting needs of SOCRRA, driven primarily by their adding of OMG and phone books to the material stream and targeting of a de-ink quality #8 news market specification • The de-bagging trommel screen at the transfer station has not performed to expectations with excessing residue in the form of lightweight bagged yard debris and clumpy brush/twigs as well as continued breakdowns of the trommel rollers

Based on the experience of the Consulting Team in working with each of the six CMC communities in equipment selection, the following observations can be made.

- The competitive bidding process for equipment and facilities went reasonably well for most of the purchases.

- Bidding of most facilities went well with very favorable pricing due to a downturn in the construction industry .

- Some mistakes were made in selection of particular pieces of equipment. These mistakes were the result of inexperience on the part of the CMC community in assessing the risks associated with particular pieces of equipment. For example, purchases of equipment from manufacturers with no track record is always a risk. However, that risk was not objectively assessed in some of the purchases due to inexperience and a reluctance to fully involve the Consulting Team in the final equipment choice.

3: Compare Participation and Diversion Rates by Community

The following chart summarizes key participation and diversion rate performance by community.

The following conclusions can be drawn from the comparative chart on the following page.

- Evaluation of program performance is difficult with less than a year of data in hand in most cases and only a month or two in some.

- Most programs have benefited from reasonably high participation levels both on a weekly and monthly basis.

- There is a tremendous range in capture rates per household on both the recycling and composting sides. Recycling capture rates generally are lower than projected, even though the projected figures are taken from field data for established programs. Many explanations are possible for each community but no clear indicators as to the causes. It is expected that performance will improve once the programs are past these start-up stages.

Community	Participation and Diversion Rate Performance
City of Buchanan	• Attained a 50% weekly set-out rate with estimate 80% monthly participation in residential curbside recycling service • Actual tonnages expected to be nearly 10% higher than planned for recyclables and 50% higher for yard waste • Refuse hauled to landfill is down 20% from comparable period last year • 360 lbs/household reported as actual recycling quantities collected versus a planned 290 lbs/hh • 1107 lbs/hh reported as actual yard waste quantities collected versus planned 723 lbs/hh
Village of Caseville	• Participation data not yet available • Early data indicates that recovery rates per household are exceeding plan (235 lbs/hh/yr versus planned 207 lbs) • ICI diversion appears to be in line with plan estimates although program is not yet fully implemented • Diversion through leaf collection is 40% above projection at 162 lbs/hh versus planned 114 lbs/hh
Delta Solid Waste Management Authority	• Participation rates in residential curbside recycling programs estimated to range from 75 to 85%. • Breakdown of diversion rates for recycling not available although aggregate data suggests that 176 lbs/hh is being recovered compared to a planned 290 lbs/hh • ONP recovery is significantly lower than anticipated and OCC recovery much higher than anticipated which indicates some problems with base data • ICI participation is much higher, possibly due to increased accessibility to recycling services due to use of the co-collection vehicles • Yard waste diversion difficult to calculate given limited data - but appears to be within range of planned diversion
Isabella County	• Old magazines and boxboard added to list of recovered materials • 71 tons recovered during first month of curbside operation compared to a planned average of 50 tons per month for the year. MRF now operating at 350 to 400 ton per month rate, nearly 25% above plan although some material is sourced from out of county by the MRF operator. • 65 tons of recyclables from drop-off during same month compared to a planned 87 tons • Leaf volumes are well above plan at 1,071 lbs/hh/yr compared to 540 lbs/hh/yr in the plan • Grass is below projection at 225 lbs/hh/yr versus plan of 950 lbs/hh/yr. • Total yard waste diversion results are below plan at 1,337 lbs/hh/yr compared to plan of 1,815 lbs/hh/yr

Community	Participation and Diversion Rate Performance
City of Lansing	• Spring 1992 residential curbside recycling participation estimate of 75% • Recovery rates for recyclables far below projections at an expected 3,428 tons in first year rather than the planned 8,027 tons/yr. • Results in an actual recovery rate of 178 lbs/hh/yr versus planned 382 lbs/hh/yr for recyclables • Discrepancy on number of households in CMC plan versus those receiving service (38,600 versus 42,000 in CMC Plan) • Similar low diversion rate performance in yard waste with 217 lbs/hh/yr. reported versus a planned 1,308 lbs/hh/yr. • Further investigation has been recommended in light of these preliminary results in order to guide corrective action
Southeast Oakland County Resource Recovery Authority	• Residential participation data for curbside recycling programs not readily available • Recovery rates for recyclables somewhat lower than CMC plan (17,453 tons compared to the planned 23,409 tons) with per hh recovery at 309 lbs/hh/yr versus the planned 359 lbs/hh/yr. • Yard waste recovery was on target with the CMC plan (730 lbs/hh/yr reported against a planned 734 lbs/hh/yr)

4: Compare Program Efficiency by Community

The chart on the following page summarizes key program efficiency characteristics by community type.

Based on the experience of the Consulting Team in working with the institutional and political structures of the six CMC communities, the following observations can be made.

- Costs per household served are generally tracking at or below plan projections, however lower volumes in some cases are resulting in costs per ton being significantly higher than projected. The latter is expected to drop as volumes increase.
- Market revenues per ton for processed (baled, crushed, etc.) are generally higher than planned. This is actually not that surprising since the plan was developed during a strong downward cycle in markets and a conservative forecast was used. Market prices for unprocessed material, though, continued to be very weak, as projected in Plan.
- Direct comparison of actual costs to the plan projections is sometimes difficult since the format ~~of~~ used by the communities in their budget reporting is not always consistent with the Implementation Plan format. As well, some unusual anomalies are present in some financial reports where portions of the labor cost are written off to other programs, equipment replacement is not funded or costs are bundled with other non-CMC programs (such as the case with co-collection in Delta) making a direct comparison to Plan difficult.

- It is apparent that program managers will need time to develop the skill of using budget data to improve the cost effectiveness of their programs by identifying areas for savings or increased efficiencies. This includes the ability to recognize the tradeoffs of higher market prices and increased costs for contaminant removal.

Community	Program Efficiency Characteristics
City of Buchanan	• Curbside collection costs are below plan • MRF operating costs are 32% higher than plan but coincide with the 38% higher throughput for the facility • Market prices are strong for fibers but weaker than projected for container materials
Village of Caseville	• Cost data for recycling collection and processing is varying slightly from plan • Equipment replacement is fully budgeted in their cost accounting system and incorporated into their rate structure • Cost data for yard waste collection and processing is also below plan although labor costs are higher - again with equipment replacement not fully funded • System of residential and ICI recycling fees is effectively covering program costs • Market prices are above plan although actual funds received have been minimal to date
Delta Solid Waste Management Authority	• Comparison of actual recycling collection cost to plan is difficult due to combined pickup of both recyclables and refuse and inconsistencies in equipment replacement contributions. Preliminary conclusions are that the co-collection approach has helped keep total costs (refuse and recycling) below levels expected if a specialized recycling vehicle were used • MRF operating costs are also difficult to use for direct comparison since Lakestates receives contracted payments for labor costs. DSMWA is making significantly larger equipment replacement fund contributions than planned • Market revenues are meeting or exceeding plan except for OCC which is about 40% below plan
Isabella County	• Curbside recycling collection costs appear to be above market rates, yet were the result of a competitive bidding process • Significant savings in operation of depot system using existing public sector management and staffing resources • Full implications of MRF service agreement on operation costs still difficult to determine with only 2 months of data • Market prices are very good, with revenues possibly exceeding plan by 40-60%
City of Lansing	• Recycling collection costs per household are very close to projections; however the low diversion has resulted in significantly higher costs per ton at $243 instead of $122. • Similarly, total recycling processing costs are in line with original projections but low diversion results in a per ton cost of $41 versus a planned $17. • The net impact, after accounting for revenue from material sales, shows actual costs per hh are close to the planned costs per hh, while per ton costs are driven up to $274 from the $128 due to the lower diversion • Market revenues were $35,790 instead of the planned $90,660 due primarily to lower diversion but also by lower than expected per ton prices for all commodities except newsprint
Southeast Oakland County Resource Recovery Authority	• Total and per-unit processing costs are projected to be close to CMC Implementation Plan projections • Market revenues were significantly better than CMC plan - projected to be about $603,000, or about $70,000 more than anticipated even with lower tonnages

III: Success Factors and Overall Program Performance

In this section the six CMC programs will be compared more directly as representative programs for their particular type of community. This comparison will discuss the optimal conditions for successful implementation for each type of community, the performance of each community relative to these conditions for success, and then lessons that can be learned that will be useful to other communities seeking to use the CMC community as a model. In addition, lessons for other states considering establishing local model programs are also discussed.

For this discussion the following community types will be covered, which correlate with the CMC communities as follows:

• Small Rural City	Buchanan
• Small Rural Tourist	Caseville
• Medium-Small Rural Multi-Government	Delta
• Medium-Large Rural Multi-Government	Isabella
• Large Urban City	Lansing
• Large Urban Multi-Government	SOCRRA

Since the original definition for a medium-sized CMC community was quite broad (population between 5,000 and 50,000), two sub-categories were created for this analysis, Medium-Small and Medium-Large, to reflect differences in needs and resources.

A: Required Conditions for Successful Implementation

Successful implementation of recycling and composting projects is taking place across the U.S. on a daily basis. Grants, such as those provided to the CMC communities are not necessarily needed in order to be successful. What is needed are the basic elements described as follows:

1: Community Support and Involvement Capabilities

Leadership and the will to implement are often said to be the single most important element of any program's successful development - recycling or otherwise. Some communities are lucky enough to have a champion with a vision of the program's future. For most communities, however, recycling programs can and in fact are often developed through a coordinated effort to build and develop community support through promotion and education.

It is in such an environment that leaders emerge and that the will to implement can develop amongst groups of leaders. The shared leadership approach gains strength as more individuals are educated and exposed to program promotion materials. From a core of leadership, a broad community support emerges, which then is able to bring those more reluctant potential supporters into the network.

Building such a community support network takes time. Done carefully it provides the framework for successful implementation. If maintained properly this community support network is a tremendous aid in both crisis intervention as well as continuous improvement in the delivery of recycling, composting and education services.

Weak or one dimensional community support will result in a polarized and politicized implementation process, which could lead to stalling or at best, a recycling program that is in place but whose performance is substandard.

2: Organizational Structure

Community support builds the consensus to implement a recovery program. Once that consensus is achieved the "assignment" to implement must be turned over to an organizational structure that has all the managerial tools required to meet these community expectations. Implementation requires a broad range of tasks to assess needs, evaluate options, provide a framework for design decisions, integrate community needs into a final program design, seek both capital and operating funding, develop staffing plans, procure equipment, hire and train workers and managers, organize outreach programs, coordinate start-up efforts and monitor and manage for continuous program improvement.

These are demanding challenges for any organization. Weak organizational structure can undermine community support and create programs that do not meet expectations or needs. An effective organizational structure helps build stronger community support and results in a growing dynamic recycling, composting and education system.

3: Marshalling Resources to Get Started

Having an organizational structure in place that is effective requires that resources be gathered to get started. This means hiring staff and/or technical consultants, organizing volunteers, setting up meetings, preparing action items for elected officials, and generally incurring costs both large and small that are needed to guarantee follow-through on the recycling, composting and education goals. The marshalling of resources begins the process of translating ideas into action - tackling the practical issues associated with implementation of a broadly supported but general recycling, composting, and education goals.

Without this marshalling of resources, action is not taken and frustration takes over. Again, community support is weakened and organizational tools and structure used ineffectively. Many administrators will maintain that if leadership is not serious about providing seed funding then they are not serious about their goal. While this may be a self-fulfilling prophecy on the part of administrators, it does reflect the conflicting priorities that must be dealt with in the public sector on a daily basis.

Many programs have successfully financed the start-up stages through alternative sources of in-kind support, utilizing existing resources in enterprising ways. Successful examples of this approach include the use of court-appointed "volunteers," prison labor, employment training participants (high school and adult), social service programs, elderly and retired persons, etc. as labor resources for recycling programs. Economical "financing" tools have has been used by many programs under the auspices of a "pilot" or experimental program to test certain service delivery mechanisms and to get "in the business."

4: Ability to Develop Funding Mechanisms

The programs and services that are part of source reduction, recycling and composting programs will require capital funding and ongoing operational funding. Revenues from the sale of materials generally do not cover operating costs. Savings from avoided landfill disposal, while significant, often take time to be realized. In the long run investments in recycling and composting programs and their supporting promotional/educational programs make economic sense. In the short run additional costs are typically incurred and must be recognized as a key issue in implementation.

Developing funding mechanisms that are effective requires community-wide support, effective organizational structure and seed funding. It is never easy; if a community is not prepared for the difficult discussions and decisions that are part of this element of success, then recycling, composting and education programs should not even be proposed. Program managers need to "sell" funding packages as much as they need to promote participation.

5: Public/Private Roles

An implementation issue of equal challenge and difficulty is the question of public versus private sector roles in program organization, management and delivery. Having a clear philosophy on public and private roles is the key. A private sector approach is implemented in a completely different way than a public sector approach. A lot of time can be wasted if this issue is not clarified up front. It is an issue that often takes considerable analysis and discussion as part of a needs analysis and capabilities assessment. This requires seed capital and organizational resources as well as considerable amounts of education for government officials, private sector concerns and the community.

These different project responsibilities can and should be blended together as a partnership of public and private capabilities and interests. These partnerships can take many forms, with risks and opportunities allocated in many ways. Settling this issue up front can pave the way to smooth implementation of a successful program. Avoiding it or leaving it to late stages of the implementation process can stop a program in its tracks.

6: Technical Capabilities and Expertise

Recycling and composting are not enormously difficult technical projects, but they are technical by their very nature. The best program designs and implementation budgets can be shattered by incorrect technical assumptions on composition, capture rates, mass balance, performance specifications and equipment configurations. The successful implementation process has access to the appropriate level of technical capabilities and expertise for the program being considered.

There is also no need to "reinvent the wheel." Often in the excitement of pursuing the frontiers of recycling there is a tendency to get caught up in the innovative possibilities. That is all well and good - recycling and composting as viable solid waste management technologies are a direct result of an openness to innovation. However, the path has been travelled by many now, and effective use of resources and time dictates that as much of that expertise should be utilized rather than risking repetition of common mistakes through a "learning-by-doing" approach.

7: Management

A good manager can take a poorly designed recycling program and make it perform like a model initiative. Unfortunately, the reverse is also true - a great program can be ruined by poor management. Poor management can neutralize any of the key elements of success already discussed.

The success of recycling, composting and supporting education programs is very sensitive to an optimum balance of all these key success features. This requires pro-active management - a very different challenge than many other types of service delivery. Citizen and business interest must be maintained, participation must be strong, markets must be satisfied with material quality, contamination must be kept under control, operating efficiency must be a continuing goal and new opportunities for diversion must be explored.

There is a tremendous difference between most traditional solid waste management program demands and the demands of managing recycling and composting programs. With traditional solid waste management services the main goal for local government is providing cost-effective, dependable public services. For recycling and composting programs, the manager must focus on providing an effective public service and promoting public support, as well as generating a quality, high-value end-product. This end product orientation is a somewhat new management focus for local units of government, at least for most individuals in solid waste management.

Marshalling Resources to Get Started

Assessment	Buchanan - The Small Rural City Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 ✓4 5
Commentary	The City had established recovery programs and expended funds in their development - essentially a learning by doing approach. This activity had been well underway prior to the creation of the CMC program. Its scope or reach was limited though, until CMC funds help set a new standard for their efforts.

Ability to Develop Funding Mechanisms

Assessment	Buchanan - The Small Rural City Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓5
Commentary	The City demonstrated a clear sense of the need to address this issue right from the start and had initiated discussions on the issue even prior to grant award. Final decisions on funding were made well in advance of the critical timelines and were fully integrated into ongoing budgeting and funding mechanisms. There was clearly a recognition that the benefits of the CMC grant dollars required this focused attention on securing the balance of operating funding in order to meet the SWAP grant requirements.

Public/Private Roles

Assessment	Buchanan - The Small Rural City Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓5
Commentary	Buchanan had a well defined concept of its role as a public sector municipal service provider, employed its own public works work force and had joined the publicly-owned and operated solid waste management authority. Their municipal philosophy was well developed and widely accepted. CMC funding did not appear to cause any shift in this approach.

Technical Capabilities and Expertise

Assessment	Buchanan - The Small Rural City Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 ✓ 3 4 5
Commentary	Technical issues were always addressed, but through a lengthy process that involved use of technical resource people both inside and outside of the organization. The resulting delays often held up program design and implementation tasks. The technical resources (consultants, etc) made available through the CMC program were instrumental in broadening local understanding of the potential direction their programs could take.

Management

Assessment	Buchanan - The Small Rural City Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 ✓ 4 5
Commentary	Management of the key elements of success have resulted in a sustainable program that is in place, well positioned for growth and exhibiting strong and growing community support. However, the limited resources dedicated to management in the City frequently delayed timely attention to these issues and may still threaten on-going program performance in the future. Managing today's cities requires sensible prioritization and balancing of resource allocation which Buchanan demonstrated with experience and skill, but which may not have maximized return on the CMC investment.

2: Caseville - The Small Rural Tourist Village

As a CMC community the Village of Caseville has had many challenges as it struggles to perform in each key success factor. Its partnership for operating services with the private sector firm, Green Inc., may have forged a linkage with the necessary strength needed to improve chances for a sustainable program for the long term. Following are assessments and comments for each key success factor.

Community Support and Involvement Capabilities

Assessment	Caseville - The Small Rural Tourist Village Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 ✓ 3 4 5
Commentary	Caseville frequently exhibited a wavering of commitment (during initial planning and implementation) that reflected a lack of consensus on program direction and goals amongst some of the key decision makers for the Village. Capabilities and support have improved significantly as the program developed and this is exhibiting itself in a growth in the widespread acceptance of the CMC program and the new services. Without the CMC grant dollars to focus local discussions it is more than likely that local recycling efforts would have waned - at least in the short term.

Organizational Structure

Assessment	Caseville - The Small Rural Tourist Village Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 ✓ 4 5
Commentary	Organizational structure was certainly not a strength but it did show a resiliency that was able to survive repeated diversions and setbacks, pulling the program back on course. This demonstrates that sufficient organizational structure is in place to maintain the task by task nature of a CMC implementation project. Again, the CMC funds provided an incentive for that organizational structure to be more fully developed and adopted as a forum for decision making.

Marshalling Resources to Get Started

Assessment	Caseville - The Small Rural Tourist Village Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 ✓ 3 4 5
Commentary	There was not much evidence in the early stages that funds had been reserved to address any of the numerous decisions and issues that would need to be addressed in the course of program design and implementation. This caused numerous instances in which the whole program was vulnerable as the Village learned, the hard way, that those types of resources would be needed in order to guarantee follow through on project goals.

Ability to Develop Funding Mechanisms

Assessment	Caseville - The Small Rural Tourist Village Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓ 5
Commentary	The Village approached the issue of program funding with a sense of direction and a commitment to see the process through to full implementation, eventually developing some of the more innovative user fee based funding mechanisms in the project, especially for ICI services. While the CMC funds were an incentive to create this funding mechanism the Village is now in a position to rely on its own funding mechanisms for future capital requirements.

Public/Private Roles

Assessment	Caseville - The Small Rural Tourist Village Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 ✓ 2 3 4 5
Commentary	The Village wavered considerably on the issue of public and private sector roles in delivery of the service, lacking a methodical process for exploring the issue objectively. The private contracting arrangement that finally developed is exceptional considering the circuitous route taken to get there. It appeared at times that the perception and lure of "free" equipment under the CMC program caused more interest in municipal operation than was justified by the Village's historical pattern of contracting out for solid waste management services.

Technical Capabilities and Expertise

Assessment	Caseville - The Small Rural Tourist Village Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 ✓ 2 3 4 5
Commentary	At various times during the planning and implementation of the project as many as five different individuals served as the source of technical guidance. Inconsistency in this area was a key problem for the Village. There is no question that CMC support assisted in making available to the Village a dependable source of high quality technical advise.

Management

Assessment	Caseville - The Small Rural Tourist Village Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 ✓ 4 5
Commentary	In settling for a private contracting arrangement for ongoing program operation the Village is working with its managerial strengths and the managerial skills of its contractor. The elements of a good management team are there and with further development of this management team, performance in many of the other key success factors can be improved.

3: Delta Solid Waste Management Authority (DSWMA) - The Medium-Small Rural Multi-Government

Despite considerable challenges in the multi-governmental project, DSWMA is holding its own in each of the key success factors. With continued attention to those factors, the Delta program could represent one of the more innovative CMC projects for rural areas looking at curbside collection via co-collection. Following are assessments and comments for each key success factor.

Community Support and Involvement Capabilities

Assessment	DSWMA - The Medium-Small Rural Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 ✓ 4 5
Commentary	The various parties involved in the authority and in development of the recycling program demonstrated reasonable ability to pull together community support on key issues. Some issues challenged this will to implement and showed where ownership of the project was weakest, but continued support of the project prevailed. CMC funding probably caused recycling programs to be adopted much sooner than would have occurred without grant support by creating an environment where deadlines and perseverance prevailed.

Organizational Structure

Assessment	DSWMA - The Medium-Small Rural Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓ 5
Commentary	Because of the multi-governmental nature of the project, the organizational structure consists more of separate centers of organizational strength with the authority structure serving as a coordinating body. It has worked reasonably well. CMC funding resulted in full utilization of this decision making structure which in general was flexible enough to accommodate program requirements.

Marshalling Resources to Get Started

Assessment	DSWMA - The Medium-Small Rural Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength. 1 2 3 ✓ 4 5
Commentary	Like Buchanan, Delta has taken a learn by doing approach to developing recycling and composting services, especially through Lakestates Industries. The experience that resulted assisted the community in presenting a fairly well developed concept for processing. However, similar effort had not been exerted for the communities regarding the question of curbside collection - resulting in a lengthy learning process for key decision makers.

Ability to Develop Funding Mechanisms

Assessment	DSWMA - The Medium-Small Rural Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 ✓ 4 5
Commentary	The authority was set up as a financing vehicle for local units as they worked together to develop solid waste management facilities. As the scope of the CMC program continued to grow, its financial requirements appeared to go beyond either the capabilities or willingness of the local units. Despite significant delays, this did result in some innovative approaches with the subscription-funded co-collection vehicles replacing the drop-off proposal which would have required an authority-funded system.

Public/Private Roles

Assessment	DSWMA - The Medium-Small Rural Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓ 5
Commentary	The authority has a conceptual arrangement in mind for its public and private partnership and then methodically pursued exploration of that through bidding and contract negotiations. CMC funds certainly provided a lot of the momentum that the Authority required to be innovative and aggressive in its use of these bidding and contracting arrangements.

Technical Capabilities and Expertise

Assessment	DSWMA - The Medium-Small Rural Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 ✓ 4 5
Commentary	The authority has reasonable access, through its membership and contractors to qualified technical resource persons. If suffered from the decentralized and volunteer oriented access to this expertise which resulted in more of a crisis or fire fighting approach to its use. Delays and long turn-arounds on technical issues were experienced. The CMC funds and technical support helped breakdown preconceptions about what the "conventional wisdom" was for expanding the recycling programs. To their credit, local technical resource people learned fast and arrived at their own different recommendations after considering the outside input - but again this happened at a significant cost to project timing.

Management

Assessment	DSWMA - The Medium-Small Rural Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 ✓ 3 4 5
Commentary	Again, the lack of a single program director and dedicated project manager has resulted in delays and inconsistent management attention. This is being partially addressed through contracting with the regional planning agency, but still is a less than optimal approach to maximizing the opportunities for success. Subsequent actions to involve the regional planning agency in management tasks is definitely a result of CMC project requirements that exceed the capabilities of the old management system.

4: Isabella County - The Medium-Large Rural Multi-Government

Creative managerial problem solving and continued collaboration amongst the key units of government give Isabella a reasonably strong foundation for successful performance over the coming years. Following are assessments and comments for each key success factor.

Community Support and Involvement Capabilities

Assessment	Isabella County - The Medium-Large Rural Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 ✓ 4 5
Commentary	The County and City of Mt. Pleasant had been working on this project for a long time, demonstrating good perseverance and a continued effort to put the program together with full participation from elected officials. Incidents of lost momentum were not uncommon, though, demonstrating that broad ownership of the project could be improved. Given the number of times that it appeared that the project would be halted, a great deal of the credit for keeping it on track goes to the program requirements which accompanied CMC grant dollars.

Organizational Structure

Assessment	Isabella County - The Medium-Large Rural Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓ 5
Commentary	Organizational weaknesses in the early stages of the project developed into a strength with the formation of the MRF Governing Board. This type of creative organizational development shows how perseverance and pro-active management can strengthen the opportunities for success. While this organizational step was taken to respond to CMC program requirements the local governments had already been exploring some type of intergovernmental structure well before deciding to pursue the CMC grant.

Marshalling Resources to Get Started

Assessment	Isabella County - The Medium-Large Rural Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓5
Commentary	Both the City and County made regular contributions to plans, studies, siting procedures, and start-up programs in order to improve the likelihood of success. Continued efforts to secure seed funding grants were an asset as well. There are indications that even without CMC funding, the City and County would still be diligently pursuing resources to allow the program to continue growing, but at a slower pace.

Ability to Develop Funding Mechanisms

Assessment	Isabella County - The Medium-Large Rural Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓ 5
Commentary	The pro-active approach to marshalling necessary resources carried through to the ongoing operating fund approach as well. Although complicated by the lack of a supporting organizational structure, the creation of the MRF Governing Board provided a basis for a suitable funding mechanism to be developed, including the use of tip fees to leverage additional revenue and tonnage.

Public/Private Roles

Assessment	Isabella County - The Medium-Large Rural Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓ 5
Commentary	A reasonably clear approach to public/private relationships was followed throughout the project in which the County and City remained committed to a goal of project control, while recognizing that private sector contracting was going to be an important part of their management plan. The CMC funds helped increase the public sector's buying power, which allowed it to leverage a more beneficial public/private partnership than would likely have occurred without the funding.

Technical Capabilities and Expertise

Assessment	Isabella County - The Medium-Large Rural Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓ 5
Commentary	Again, the MRF Governing Board and its technical subcommittee served as a very effective platform for organizing technical review and technical decisions for the project. The CMC-funded Consulting Team served to introduce new approaches and concepts to the County - helping it to be a leader amongst its peer counties in recycling services.

Management

Assessment	Isabella County - The Medium-Large Rural Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓ 5
Commentary	The County has demonstrated a commitment to effective management of the program through hiring of a recycling coordinator and educational staff and through the recent move to create a recycling department. It will take time for this management team to get a handle on the new operations in order to maximize their effectiveness, but it appears that the prospects for a successful program are strong. These kinds of steps were in direct response to the size of the capital investment made possible by the CMC funds.

5: Lansing - The Large Urban City

The potential for a successful model large city program exists but, as described below, ongoing conflicts continue to distract the City from pro-active management of the program and send conflicting messages to City residents and businesses about the importance of recycling to the City's solid waste management future.

Community Support and Involvement Capabilities

Assessment	Lansing - The Large Urban City Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 ✓ 3 4 5
Commentary	In a community as large as Lansing, with such a diversity of population and leadership, it would be hard to say that one would ever see a "consensus" and a "will to implement" go unquestioned for very long. The experience, though, was one in which there was, and still is, continued controversy over some elements of the program, demonstrate that ownership and consensus are very difficult to achieve in larger communities. The perseverance shown, though, by backers of the program is indicative of the patient attention required to use objective information and education in efforts to continue building community support. It is apparent, however, that far greater resources, time and attention need to be directed at building community understanding and community support for both popular (curbside) and not so popular services (fee system) which would help in diffusing the controversy that seems to accompany any difficult program decisions. Equally strong attention needs to be directed at building private sector support as well.

Organizational Structure

Assessment	Lansing - The Large Urban City Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 ✓ 4 5
Commentary	The City has a very well organized structure for program implementation. It may, in fact, have been almost too well organized - with the best example being the frequent legal interpretations of program direction by the City's legal counsel, sometimes to the detriment of what appeared to be the City's best interests. It is apparent that organizational barriers to implementation were significant and the CMC funding was key to getting past some of these obstacles.

Marshalling Resources to Get Started

Assessment	Lansing - The Large Urban City Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 ✓ 4 5
Commentary	Although the City certainly had the financial capability, the amount of operational resources invested prior to initiation of the CMC project was minimal, resulting in a very demanding learning process for staff, elected officials and the community interests as CMC program design decisions needed to be made. To the City's credit, though, additional resources in the form of bond funds, staff time and additional general operating funds during the program design process helped expedite the learning process. Again, this appeared to be an organizational response made possible by the lure of the CMC grant dollars.

Ability to Develop Funding Mechanisms

Assessment	Lansing - The Large Urban City Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓ 5
Commentary	In what was probably one of the more difficult approval processes of any of the CMC communities (due to the amount of the funds required), the City demonstrated perseverance in tackling the issues despite the many different views and interests that had to be involved in the decision on how to fund operating costs for the program. In this process, the City drew on the full resources of all departments that would be affected or have some role in making the decision - successfully bringing a compromise proposal through to full Council approval. The Public Services Department, to its credit, kept the issue of operational funding on the top of the Council and Mayor's list of priorities until it was resolved.

Public/Private Roles

Assessment	Lansing - The Large Urban City Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 ✓ 3 4 5
Commentary	The City's philosophy on public and private sector roles is problematic in that two very strong views are held by different interest groups - and hybrid public/private arrangements end up getting created in which both the City and the private sector haulers are in relatively weak positions. Some form of regional processing cooperation, which strives for a win/win relationship, would probably better serve the City's interests, yet this option remains unexplored due to the standoff between the two opposing views. This conflict is also the root of most of the weak points in the City's leadership and community support for the program as covered in the first key success factor. The typical homeowner does not get the impression that the City (or the private sector) is 100% behind its recycling programs. Unfortunately, neither the CMC grant funds nor the technical assistance appeared to break this logjam in any significant way.

Technical Capabilities and Expertise

Assessment	Lansing - The Large Urban City Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓ 5
Commentary	The City demonstrated reasonably strong capabilities and expertise within its Public Services Department and engineering staff. This capability definitely enhanced integration of the collection operation and made development of the facility possible given the challenges posed by a relatively constrained site at the public works yard. CMC-funded technical assistance, though, brought the very specialized recycling, composting and source reduction education knowledge that was required in setting direction for the Lansing project.

Management

Assessment	Lansing - The Large Urban City Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 ✓ 4 5
Commentary	Again, despite relatively strong management capabilities, with highly qualified people assigned to the project, a significant amount of management time is spent in the conflicts described in earlier key success factor assessments, rather than in proactively working to improve the program. Despite this barrier, and due primarily to the skills, perseverance and long hours of the management team, the project has continued to move forward. Its long-term viability, though, is vulnerable to breakdowns in this management capability. Program performance must be improved as staying at current levels of efficiency will not work.

6: Southeast Oakland County Resource Recovery Authority (SOCRRA) - The Large Urban Multi-Government

With more than twenty years of experience operating solid waste management programs, SOCCRA already can document successful realization of many of its source reduction, recycling and composting goals as highlighted below.

Community Support and Involvement Capabilities

Assessment	SOCRRA - The Large Urban Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓ 5
Commentary	SOCRRA and its member communities have methodically worked over many years to develop strong support and consensus on the program direction and purpose. The benefits of this work increase with each additional year of steady progress. The CMC funding helped them do a better job on the tasks that they were already focused on - and perhaps allowed them to do so with a slightly longer term view, which made room for stronger improvements in the program.

Organizational Structure

Assessment	SOCRRA - The Large Urban Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓5
Commentary	The authority organizational structure of SOCRRA has served the member communities very well, providing all the necessary tools for program development and implementation. The CMC project had little impact on SOCRRA's organizational structure which easily handled all organizational requirements.

Marshalling Resources to Get Started

Assessment	SOCRRA - The Large Urban Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓5
Commentary	SOCRRA has continually put funds into the program to tackle the next in a continuing stream of implementation issues on a timely basis, never overdoing such efforts and always allocating just enough resources to answer key implementation questions so that direct action can be taken and programs put in place. They have benefited as well from use of a variety of demonstration project approaches that vary from funding of pilots to investigative studies to site visits of model programs. The CMC funds and technical resources were viewed as another source of this type of support.

Ability to Develop Funding Mechanisms

Assessment	SOCRRA - The Large Urban Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓5
Commentary	SOCRRA continues to demonstrate the ability to develop, within its authority structure, innovative cost allocation systems that meet the needs of all SOCRRA programs and provide appropriate incentives for source reduction and recycling over disposal. The CMC funds did not significantly alter these systems.

Public/Private Roles

Assessment	SOCRRA - The Large Urban Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓5
Commentary	SOCRRA and its member communities have a clear philosophical approach to public and private roles, and have been willing throughout the program, as they have in their ongoing operations, to use public sector contracting where appropriate given considerations for price, risk sharing and control. SOCRRA's historic role in management and control of their waste stream has sent a market signal for many years to area private companies that SOCCRA would, at the right time, extend its system into a publicly controlled MRF project.

Technical Capabilities and Expertise

Assessment	SOCRRA - The Large Urban Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓5
Commentary	SOCRRA managerial staff have been able to bring required technical knowledge to bear on any program design and implementation issue presented to them during the CMC program. In some cases where this involved use of outside resources, the decision to do so was made quickly with few delays in project implementation.

Management

Assessment	SOCRRA - The Large Urban Multi-Government Weakness<<<<<<<<<<<<<<<<<Neutral>>>>>>>>>>>>>>>>>Strength 1 2 3 4 ✓5
Commentary	SOCRRA management staff, as well as the SOCRRA Board of Directors (made up of the City Managers of the member communities) have demonstrated a versatile approach to program management, involving the communities and interested citizens to the maximum degree possible and through development of creative program adaptations (such as the grass quota system) to respond to managerial challenges. Again, the CMC funds augmented this capability.

C: APPLICABILITY TO OTHER COMMUNITIES

In the previous section, the six model programs were examined in the context of the key success factors and initial observations made on:

- What role the DNR-funded consulting services played in building on the required conditions for success, and
- What role the DNR SWAP implementation grant played in helping the model communities take action.

This next section attempts to further refine these observations on the role of the CMC SWAP grants and answer the following questions for communities that are looking at the CMC programs as potential models for action:

- How likely are other communities to be able to replicate the project?
- How can other communities learn from this project?
- Are required conditions for success present in other similar Michigan communities?

Each one of these questions will be examined in order by type of Community.

1: The Small Rural City (Buchanan)

The CMC small rural City model points out that an individual City has many of the necessary elements of success contained in its basic organizational structure provided for under Michigan law. These include the power to manage solid waste and recycling program as it sees fit, the ability to raise funds, the community orientation required to build a sense of ownership, and the managerial control and approach that comes from being a small City in the first place. It is likely that many small rural Michigan Cities have this same potential exhibited by the City of Buchanan in implementing their program.

The most important lesson from this Small Rural City model, though, is two fold:

- Develop a consistent position on public/private roles and partnerships and then use the full powers as a City to maintain the accepted public sector role from a position of strength. This includes the ability to own facilities, develop long-term contracts, set up licensing regulations, adopt mandatory recycling ordinances, and utilize the managerial and technical skills of municipal staff.

- Work with neighboring communities to increase access to technical resources, to improve negotiating leverage and to increase options for program design. This may involve participation in intergovernmental projects, making long-term commitments to facilities shared with other governments, and working to both exercise leadership in program development while bringing the reluctant slow adopters (cities that are not very innovative) along in order to build and consolidate stronger public sector relationships.

CMC-funded technical consulting services helped this particular small rural city overcome information barriers to new options for recycling collection and processing services. CMC implementation grant dollars provided the necessary capital to facilitate a large scaling up of those programs. Without those dollars, action probably would not have been taken until the regional authority was able to convince all members that moving forward on curbside recycling was in their best interests. Thus one member of the Authority took the first step in seeking grant support and now their leadership (aided by grant support) will help the Authority move forward to improve the regional material recovery system.

2: The Small Rural Tourist Village (Caseville)

The CMC small rural tourist village model points out that a relatively isolated village, with seasonal population fluctuations at three times the winter low, has many challenges to address in examining recycling options and making sensible investments. Although equipped with many of the tools that are available to the small city, the lack of a population base makes use of those tools more difficult.

Much like our small rural tourist village model, similar Michigan communities would benefit from using a bootstrap or incremental approach in partnership with a supportive private sector service provider in order to build the necessary infrastructure for recycling and composting.

Such an approach would help overcome the three most difficult barriers to success for a small village or town:

- Lack of technical expertise.
- Lack of managerial capabilities.
- Lack of funding for equipment replacement costs.

Alternatively, collaborating with surrounding governments and the County or nearby counties, could assist in addressing the same barriers.

CMC-funded technical consulting services helped this particular small rural tourist village understand what its options were, how to use the organizational tools that were available to it as a village, and as a prompt for regular progress and action towards their implementation goals.

CMC implementation grant dollars provided the necessary capital to allow the village to leverage a strong control relationship with their private service contractor. Without those dollars, it is unlikely that the village would have ended up owning the equipment and would have more than likely utilized its contracting and hauler licensing powers to leverage the same level of services from the private sector.

The new capital required, though, requires that the public sector work in partnership with the private sector to understand what types of risks must be addressed to allow necessary trucks and facilities to be purchased for the new services. As well, the public sector may need to use its organizational tools to develop suitable organizational and funding mechanisms to select the level of services desired and then be able to cover the costs of providing those services.

3: The Medium-Small, Rural Multi-Government (DSWMA)

The CMC medium-small rural multi-government model points out that Michigan statutes do provide some very effective legal tools to address many of the constraints that a small rural village or city would have to overcome in implementing the recommended programs.

The authority structure solves many of the economy of scale issues that can hinder ability to develop a MRF or compost site or to effectively market recyclables. An authority structure can also assist in building technical expertise for these programs.

It is likely that many other small rural Michigan cities have the potential to join with other communities as authorities and implement programs similar to those in the CMC project.

The most important lesson from this medium-small rural multi-government model are to:

- Dedicate necessary resources and develop the required structure to effectively manage the technical and administrative tasks of the multi-governmental organization. With authorities there is always the fear of creating another layer of government, yet some type of structure is needed if the benefits of the authority approach are to be fully realized.

- Use the negotiating leverage made possible by the larger volumes of material to build effective long-term partnerships with the private sector (or non-profit agencies) so that each party does what it is best at and a win/win situation is enhanced.

CMC-funded technical consulting services helped this particular medium-small rural multi-government model build consensus on a course of action and explore options for both collection and processing of recyclables and yard waste. CMC implementation grant dollars provided the necessary capital to fund a major changeover of programs, helped precipitate long-term private sector contracting and assisted in getting new ordinances and rules in place that would otherwise not have happened. Without those dollars, the old system of drop-offs would still be in place and the concept of curbside recycling programs would still be in the discussion stage. As it turned out, some very innovative solutions emerged from the project that have significantly improved the quality of services provided to both rural and city residents in the area.

4: The Medium-Large, Rural Multi-Government (Isabella County)

The CMC medium-large rural multi-government model points out that innovative contractual arrangements between larger government organizations, even in relatively rural areas of Michigan, provide some very effective tools for achieving recycling objectives. An added benefit is that larger rural units of government tend to have in-house technical staff who are able to work together to manage the technical elements of the recommended CMC projects.

A key point with the larger rural multi-government model is that economies of scale, market leverage and buying power are typically already accessible and that working together improves on an already positive situation. Arrangements of this size may in fact be the most economically beneficial of any of the rural models explored in this CMC project.

Certainly in the northern half of the lower peninsula and in the upper peninsula a number of opportunities exist to replicate the benefits of the medium-large rural multi-government model.

The most important lesson from this medium-large rural multi-government model are to:

- Recognize the value of sharing the costs of seed funding to start moving forward on shared projects.
- Consider informal working groups of key individuals from all major players in order to facilitate communication, consensus building and ownership of goals.
- Move to more formal organizational structures when it is clear what the mission or project is that requires such action.
- Use technical consultants where necessary since the size of the projects to be initiated justify this kind of investment in development and implementation of technical recommendations.

CMC-funded technical consulting services helped this particular medium-large rural multi-government model further develop specific program design issues and carry the project forward into full design, construction, procurement and start-up. CMC implementation grant dollars provided the necessary capital to construct the MRF and leverage implementation of private contracting for services and implementation of ordinances, rules and regulations. Without those dollars, or the Department of Commerce procurement funding that preceded the CMC program, it is questionable whether the public agencies would have been able to successfully justify the investment given the perception of uncertainty voiced by various parties during the project.

Finally, this model often pushes both urban and rural people and areas together. Care must be taken to educate, build community understanding, maintain goal oriented direction, and continue to encourage new leadership that will endure the long implementation timelines associated with material recovery projects.

5: The Large Urban City (Lansing)

The CMC large urban city model points out the challenges associated with the need to build leadership, consensus and community ownership of a program for it to be perceived as being successful. As well the large urban model demonstrates the challenges posed in attempting to build successful win/win working relationships with the well-established private sector recycling and solid waste industry that typically is servicing the larger urban cities - usually in the multi-family and commercial sectors.

Even with the significant resources and organizational structure of the large urban city and the technical expertise that accompanies this, a key issue appears to be the ability to maximize the leverage of the City in negotiating with the private sector on issues such as service levels, frequency, etc. A number of mid- to large-size Michigan cities are in similar positions.

CMC-funded technical consulting services helped this particular large urban city further address construction, procurement and start-up. Consulting resources have also been used in development of multi-family recycling ordinances and rules. CMC implementation grant dollars provided the necessary capital to construct the recycling transfer station, initiate curbside collection, begin collection and processing of yard waste and leverage implementation of ordinances, rules and regulations. Without those dollars, it is uncertain how the City would have funded the capital costs of implementing the curbside recycling program since the voter adopted ballot initiative required implementation by a certain date.

6: The Large, Urban Multi-Government (SOCRRA)

The CMC large urban multi-government model points out just how effective an established solid waste management authority with established presence in solid waste management and control of the waste stream can be with implementation of both yard waste and curbside recycling programs.

Like the medium-large rural multi-government project, the urban multi-government project basically is building on an already strong economy of scale that is achieved through intergovernmental cooperation. Effective management through the authority structure is targeted at further improvements in the cost and service package made available to member communities.

There are many existing examples in Michigan of use of the authority structure as well as numerous examples of cities in urban areas that may want to consider such multi-government projects.

The most important lesson from this large urban multi-government model are:

- A thorough assessment is needed of historical patterns of public and private sector activity in communities before an assumption is made that an authority structure best serves their purpose and goals. Some areas, for example, already have very well established private sector recycling and waste management infrastructures, which provide tougher barriers to strong public sector involvement.

- Even after a decision to pursue such an approach is made, an effective authority structure still takes time to develop and implement. The benefits are long term so careful attention should be placed to issues of organization, representation, staffing, contracting, etc.

- Qualified staff are an important element of an effective authority structure.

- Technical consultants should be used in order to thoroughly evaluate options and determine program direction.

CMC-funded technical consulting services helped this particular large urban multi-government model complete all design tasks associated with the design of the MRF and improvements to their compost operation. CMC implementation grant dollars provided the necessary capital to construct those improvements and assisted in getting new ordinances and rules in place. Without those dollars, it is unclear how the MRF would have been capitalized and how operational improvements would have been achieved at the compost facility.

D: APPLICABILITY TO OTHER STATES

How applicable is the Clean Michigan Community model capital grant approach to any other state? A full evaluation of the program to answer such a question has not been completed. The programs are still in the early stages of development and services are still being provided as the last few details of programs are put in place.

The answer, though, will be different for each state. Before a CMC-type program could be implemented effectively, each state must develop a larger statewide strategy and, depending on a long list of criteria, determine what components of the models grant approach must be utilized.

State policy makers may ask the following questions in considering whether a direct grant program targeted at model communities would be effective for them.

- Has a system of material recovery goals and target dates been developed for the state already? These are needed to set the fundamental direction of material recovery efforts.

- Have any of these goals been adopted as firm requirements for local governments to meet? Too often local units considering recycling programs spend their time asking "should we even do this?" rather than "what is the best way to do this?" While not absolutely necessary, such state-wide mandates clearly establish direction and eliminate uncertainty as to what should be done.

- Have the necessary regulatory and organizational powers been provided to the local unit of government by state law to address the solid waste management and recycling question from the position of public health and safety? Grant programs to municipalities are a waste if such funds cannot be effectively used in a legitimate local government role.

- Have local units been provided with legislatively authorized funding mechanisms to finance additional capital and operating requirements that are part of such a program?

- Are there suitable legal tools for intergovernmental cooperation that address the unique management requirements of solid waste and recycling programs?

- Is the regulatory framework for solid waste management and for recycling and composting well established? If there are areas of uncertainty, are the resources and expertise available to address regulatory issues that will surface during such a grant program?

- Does state government have an appropriate organization suitable to manage a grant program?

- Does that organization have the necessary staff expertise in management, solid waste, recycling and composting to at least be a knowledgeable participant and oversight agency for the project?

- Are accounting and reimbursement systems well established or easily developed to handle the financial scope of the grant program?

- Are there mechanisms for effective knowledge transfer once the model grant program is underway and nearing completion?

- Finally, is a mechanism available to raise the necessary funds for a grant program that will be large enough to have an impact?

Answers to these types of questions can help in assessing whether a suitable foundation is in place at the state level to support consideration of such a grant approach. Combining this supporting framework with some type of assessment of whether local units rank highly in the key factors for success identified earlier in this report would effectively screen out unfavorable state environments and unsuitable local units from participating in a program, thereby increasing the likelihood of success.

Before proceeding with such a program, other alternative strategies should be explored by states interested in such a program. These could include:

- More traditional, limited-scope grant programs.
- Technical assistance without supporting grant dollars.
- Financial incentive systems (surcharges, recycling credits, investment tax credits, advanced disposal fees etc.) to encourage private companies to implement model programs.
- Regulatory measures (minimum recycled content, hauler licensing, material bans, etc.) to require either government or private industry to provide such services.
- Statewide or regional authorities that take on facility development, ownership and operation tasks.
- Market driven approaches that stress growth in end market demand and require some percentage of recycled feedstock to be purchased within the state.

This is not intended as an exhaustive list, only a suggestion on the range of options available to reach the objective. The primary question is whether a model community grant program is the most effective method to secure development of the recycling infrastructure.

Taking an inventory of the existing recycling and composting infrastructure and its status in the "state of the art" of recycling approaches needs to be the first point of analysis.

2. Initial Evaluation of the Michigan CMC Program

In Michigan, answers to many of the questions listed on page (142) were "yes." For example:

- The state Solid Waste Policy, adopted the year prior to the CMC Program articulated a hierarchy of waste management goals, called for voluntary local government and business initiatives to meet the stated goals and outlined a State funding strategy to assist public and private sector projects. However, the Policy was not the strongest possible foundation for the CMC Program. Its goals and targeted dates, statewide, are quite general and are not even intended to apply to individual communities (i.e. the 25% recycling goal might be exceeded in some communities with little progress in others). This ambiguity weakened the overall focus on implementation for many of the participating communities as "behind the scenes" struggles over the "why should we do this" diverted attention from program design decisions that needed to be made - points that will be expanded on in the next section.

- Local governments had historically been a significant actor in solid waste management and were authorized to take on recycling and composting programs. Uncertainties about some of the specific powers of local governments, in particular counties, related to funding mechanisms and control of the waste stream, did slow down the CMC planning process for several communities, however.

- State law provided for the authority structure already in place in two of the CMC communities that facilitated development of multi-community projects.

- The MDNR had developed a relatively strong presence in recycling, although that presence was based entirely on providing general assistance and promotion, since no state mandates existed.

- The $10 million available for the CMC Program was only one subset of the MDNR's $150 million Solid Waste Alternatives grant and loan Program that would help stimulate development of a recycling infrastructure in Michigan. Through the bond funds that provided the CMC monies, the MDNR had increased its staff resources to oversee the Solid Waste Alternatives Program, including the CMC project.

- A complete, although extremely sketchy, plan for implementation of the CMC Program had been developed, including a technology transfer component where lessons learned from these six communities would be presented to other Michigan communities.

Therefore, the Clean Michigan Community Program was built on a relatively strong foundation that would seem to ensure its overall effectiveness.

Of course, the success of Michigan's model grant program will not be fully realized until the technology transfer portion of the Program is implemented. However, at this point an initial evaluation of the overall Program accomplishments is possible.

a. Problem Areas in the Michigan CMC Program

While it is anticipated that the Michigan CMC Program will be a success, there were many times during the planning and implementation process that MDNR officials felt the program would come to a "screeching halt." Examining these trouble spots can provide some insights that may assist other states in the development of their own model programs.

Program Timeframe

A large number of the problems that emerged during the planning and implementation phase of the CMC Program were created by what turned out to be an overly optimistic timeframe for project completion. A program that was planned to be completed in two years, including planning, implementation, evaluation, and technology transfer, is now moving into its fourth year and as of July 1993, was still not complete.

The Program timeframe was consistently a source of tension between the MDNR and the local communities, as the MDNR's pressure to keep each community project on schedule clashed with the community's demand for more time to meet local needs. The need to maintain a tight schedule was baed largely on the Program's objective of having model programs on-line to be of assistance to other Michigan communities. The planning, implementation, and evaluation phases of the project also had to be completed within the consultant's contract period.

Pressure to stay on schedule often strained the relationship between the MDNR and the communities during the planning and implementation process. Failure to keep the Program on schedule now poses some significant program challenges in using the CMC communities as models, which is discussed later in this section.

Institutional, Legal and Financial Issues

A problem area that resulted in significant delays in the planning phase for most of the CMC communities was the failure to make the institutional, legal and financial arrangements that needed to be in place to implement the CMC project in a timely manner. These issues needed to be addressed by the CMC communities' local governing bodies at the same time that technical planning was being done for each community. Institutional, legal and financial arrangements had to be made before the MDNR would offer an implementation grant contract to a community.

However, issues such as local recycling ordinances and funding mechanisms for ongoing operation took a back seat to technical issues such a MRF design and truck selection. Thus, even once the technical aspect of the Implementation Plans were ready to go, grant contracts could not be issued until the MDNR and the communities worked through the institutional, legal, and financial issues that also had to be addressed in the Plans.

More importantly, what specific legal efforts would be required of the CMC communities was also a problem area. The CMC Program rules were broadly worded – such as the community must have a ban on the landfilling of leaves or yard waste or a source separation ordinance. Yet the methods of instituting the ban or ordinance were not spelled out in the CMC rules and the MDNR had not historically provided specific guidelines governing local ordinances. Therefore, what constituted a landfill ban or a source separation ordinance was determined as the need arose. This was time-consuming and resulted in disputes between the MDNR and a number of the communities when the MDNR's "just in time" guidance was contrary to local thinking on the subject.

Changes to Implementation Plans

Another significant problem area during the planning and implementation phase resulted from the communities changing their positions on technical aspects of their programs. Implementation Plans were written and re-written and then even after being adopted by the communities, changes were made. Examples can be cited of final decisions being made regarding collection technology, MRF location, MRF design, operational logistics (public versus private), compost technology, etc. and then the issue being re-visited, sometimes more than once.

These changes usually arose for legitimate, or at least understandable, reasons. The changes were not so much the problem as was the difficulty in getting the changes worked out. Making a change to the Implementation Plan often required work to be re-done by Consultant Team -- revised plans, revised designs, revised equipment specifications, etc. – and yet the contract scope of services (and budget) between the Consultant Team and the MDNR did not clearly envision responding to numerous, last minute changes. Obtaining the additional planning work required an intricate negotiation process among the MDNR, the community and the Consultant Team to determine who would do the additional work, if the work entailed additional consulting service costs, and who would be responsible for paying for these costs.

Responsiveness of Technical Consultants

Complicating this entire process of processing changes to the Implementation Plans was the fact that the technical consultants were responsible to the MDNR, not the communities – an arrangement that inherently created problems. The communities were not in a position to be familiar with the extent of the consultant's scope of work, nor were they inclined to consider the budgetary impacts of asking for work to be re-done (as they would in a contract relationship between the community and a consultant.) Therefore, there were no natural forces at play that would make the communities sensitive to the consultant's contract constraints. When a community requested that a part of their Implementation Plan be re-worked, for whatever reason, and the MDNR and the consultants said it was outside the consultant's budget and scope of work (and as such would require a financial contribution from the community), the community felt "cheated." The community's frustration made resolving the problem all the more difficult and time-consuming. The net result of this arrangement was a sense that the technical consultants were not responsive to the needs of the local communities.

On the other hand, having the consultants under contract to the MDNR had positive results as well. It was clear that a number of the communities did not have the staff time or experience in managing consultant resources on their own, nor the consideration of the overall CMC program goals in directing their own consulting resources. In general, the smaller communities, with fewer staff resources, were not as well equipped to prepare project design issues for the consultants to efficiently analyze while larger communities, with greater staff resources and a history of working with technical consultants, often engaged the expertise of the technical consultants in a way that focuses the analysis on the community's particular project design questions.

It is apparent that continued efforts on the part of all three participants (consultants, MDNR and the CMC communities) to improve communication, focus the work plan, and build an understanding of each community's needs would have helped build more responsiveness in the consulting arrangements.

MNDR Staffing Levels

While the CMC Program was initially supported by additional MDNR staff resources, as the project proceeded, the state was facing a period of dwindling resources and program and budget cuts. The CMC Program, like other state programs, suffered from staffing constraints. One individual managed the consulting contract and oversaw all aspects of program planning for the six communities. The CMC project was often less than 25 percent of her daily responsibilities. Implementation of the six community programs were monitored by project managers who were carrying project loads of 30 to 40 other grants.

With limited staffing, the MDNR was able to provide only broad planning oversight and end product review, with day-to-day discussions left to the Consultant Team and community officials. If MDNR staff had been available to closely monitor the day-to-day planning activities and interactions between each community and the Consultant Team, they might have been able to better predict, mediate, and resolve many of the problem areas identified above.

3. Technology Transfer Challenges for the CMC Program

As noted earlier, the CMC Program's effectiveness in serving as a model for others will be fully realized once the technology transfer portion of the Program is implemented. There are several challenges that the MDNR will face to ensure the CMC Program serves as a source of information and assistance to others.

a. Meeting the Changing Needs of Michigan Communities

First, while the CMC models were planned and implemented, many other Michigan communities were making similar progress. Through local initiatives and with basic capital grants under the Solid Waste Alternatives Program, recycling, composting, and resource recovery educational activities were expanding around the State. As the CMC models become available, recycling and composting are already more readily accepted in Michigan as a standard part of local solid management systems. Therefore, the number of Michigan communities that have to "see it to believe it" has greatly decreased since the CMC Program was authorized in 1988.

However, the MDNR still feels there is a strong need for the type of technical assistance and technology transfer that will be offered through CMC model projects. Although solid waste alternatives are widespread, many Michigan communities have yet to initiate recycling or composting programs and these communities will benefit from the CMC lessons. In addition, the technology transfer efforts will be getting underway as most of the six CMC communities complete their first full year of operation. Many Michigan communities are similarly situated, moving into their first, second or third year of program operations. Like the CMC communities, they are now looking to improve program efficiency, expand operations or correct past mistakes in program design. The CMC communities will provide benchmarks for comparison.

Taking into consideration the changing needs of other Michigan communities, the CMC technology transfer program will need to focus less on what kind of MRF to build or recycling trucks to purchase (the focus originally conceived for the technology transfer program) and more on issues such as improving participation rates, increasing material revenues, optimizing MRF operations, or enhancing the quality of finished compost. The challenge will be in gathering and packaging this type of information, since most of these operational issues are just emerging for the CMC communities as the evaluation phase of the Program is being concluded. During this phase, the Consultant Team, the MDNR and six communities have been occupied with developing final reports for the Program and not documenting operational issues.

b. Finding Lessons for Public/Private Partnerships

Another challenge the technology transfer program will face stems from the fact that the individual CMC projects were based on local control and ownership of grant-funded equipment. The need for local control was largely to ensure that one party -- the local government – would be under contract to the MDNR and as such responsible for long-term operations. However, this factor lead to approaches that might not be applicable to other Michigan communities in the coming years.

For the Michigan communities that have not yet implemented recycling or composting projects, financing is likely to be a major obstacle. Lack of local funds or the political fortitude to develop new funding mechanisms are reasons these communities have not yet established recycling and composting programs. For these communities, solid waste alternatives will probably not come in the form of large public works projects with new publicly-funded and controlled facilities. Local funding constraints and a nearly exhausted State-assistance program may lead community officials to pursue recycling and composting services in conjunction with the private sector. Public and private sector partnerships to develop needed infrastructure or public sector contracts with firms that have existing facilities are methods more likely to be used in the future.

There are certainly examples of public and private sector cooperation in the CMC Program, such as composting in Lansing and recycling collection in the out-county areas of Delta County and the SOCCRA communities. However, these aspects of CMC Program have not been as fully documented and evaluated as the public infrastructure directly funded by the CMC program. Again, this will add another challenge to the technology transfer program in order to extract the appropriate lessons from the six CMC communities that will assist others.

c. Maintaining Commitment

The final challenge for technology transfer and, as such, a factor for overall effectiveness of the CMC Program, will be maintaining the commitment of the six communities and the MDNR in seeing the Program through to conclusion. Participating in workshops and tours and providing input for written materials such as case studies and fact sheets is part of each CMC community's obligations under their grant contract with the MDNR. However, soliciting the full cooperation of local officials who are also busy trying to maintain effective programs will be difficult. In the past three years, these six communities have undergone tremendous changes. They have taken on new programs and staff, started operating new facilities, are administering new laws and policies, and have new working relationships, including an often demanding contract relationship with the MDNR. Now that their programs are operating, these local officials are more apt to want to focus on their needs, rather than the education of others.

Dedicating adequate staff resource to the technology transfer program will also be a challenge. Due to State budget reductions, the MDNR has little existing capacity to provide technical assistance to local communities on solid waste alternatives other than what would be available to grant applicants under the Solid Waste Alternatives Program. The CMC technology transfer program will be administered by grant program staff and will be the most significant and visible technical assistance tool available from the MDNR. Yet, it alone cannot meet all local technical assistance needs. In its oversight of the Program, the MDNR must ensure that the CMC technology transfer program fulfills its obligations to transfer lessons learned from CMC communities' to other Michigan communities. At the same time, the MDNR must be careful that the CMC Program is not overwhelmed by a demand for assistance that it cannot meet, thus reducing its overall effectiveness.

4. Design Features of A Successful State CMC Type Model Grant Program

Based on the experiences of the Michigan CMC Program, the following represents suggested features of an effective grant program targeted at development of model recycling, composting and education programs.

a. Responsibilities of a Potential Applicant

Requirements would be strictly defined in a format that might include the following tasks which, in general, would demand more up-front preparation from potential applicants to a model grant program similar to Michigan's CMC initiative.

- An Adopted Overall Recovery Goal: Applicants would be required to submit an adopted material recovery goal adopted by their elected body for the next ten year period, broken down by sector (commercial, residential, etc.) and by material (ONP, OCC, etc.).

- A Material Recovery Action Plan: Applicants would be required to submit a detailed material recovery action plan, adopted by the elected body, identifying the specific programs that were expected to be implemented. The action plan would not have to be as comprehensive as the CMC Implementation Plans but would need to address all the same program areas.

- Program Development Matching Funds: Applicants would be required to have a certain amount of money set aside in an escrow account to pay 50% of the technical Consulting Team's fees. Such a provision would increase the sense of accountability felt by the community to the implementation plans and technical documents to be prepared for review by the state agency and the community.

- Contingency Funding: All submittals would need to include a backup capital financing plan that didn't require state funding. An adequate and realistic alternate funding plan would demonstrate the applicant's commitment to providing its residents with landfill alternatives like recycling and composting.

- Public/Private Partnership Plan of Action: Applicants would have to clearly state their plans for ownership, operation, etc. of program components and bring to the table their proposed arrangements for working with the private sector. Public ownership and operation proposals would have to provide an evaluation of competing private sector interests, document prior discussions and contact with those interests and justify the public ownership/operation approach.

- Regional Collaborative Agreements: Applicants would have to demonstrate interest and support for the projects and programs from surrounding communities - which would indicate a commitment to follow-through with implementation on their own within a certain time frame.

- Ordinance Language: Applicants would have to have already adopted specific ordinance or policy language regarding mandatory recycling, licensing requirements for haulers, yard waste bans and recycled content procurement policies. The state agency would provide applicants with specific language, definitions and terms for such ordinances and policies.

- Dedicated Staff: Applicants would have to identify one full time staff person whose principal responsibility would be to manage the applicants participation in the project.

- An Executive Committee: Applicants would have to convene a committee made up of key administrative and elected officials needed to prepare action items for adoption by their governing body.

- An Advisory Committee: Applicants would have to convene an advisory committee with citizens, staff, and others who would be able to provide guidance to the applicant as part of the program development process.

- Matching Capital Dollars: A 10 to 25% match would need to be set aside in an account at the time of approval as an official project.

- Commitment to Operate: Ten years of commitment to operate the program would be required.

- Commitment to Assist in Technology Transfer: Assistance in a state-coordinated technology transfer outreach effort to respond to inquiries about their program.

b. Responsibilities of the Sponsoring State Agency

There is no question that such an approach would be burdensome on potential applicants. To reduce that burden and increase the pool of qualified applicants the sponsoring state agency would follow a process that would include:

- Release of a Pre-Qualifications Package: Defining the above terms, the total grant amount to be awarded, and the feature of desirable programs that the state agency is wanting to see models developed for. Note that such programs could test the state of the art in recycling/composting program design even in states with advanced recovery programs already in place.

- Funding Community Pre-Qualification Work: The state agency would provide some portion of the required funds as a match to cover time and expenses associated with development of the required materials, plans, policies, etc. or allow a financing structure that provides other funding for the planning work (e.g. disposal surcharge). A one year timeline would be provided for the Communities to prepare their Pre-Qualification Packages. Only one in two or one in three of the participating communities would actually expect to be funded under the capital grant program.

- Submittal of Pre-Qualification Packages: The state agency would evaluate the submitted packages and select six to implement. Communities would not be penalized in being considered for a grant if they had a viable financing plan.

- Award of Model Community Grant Packages: The state agency would sign an implementation agreement with each selected community and then proceed with a six to twelve month final implementation plan and system procurement period, followed by a twelve month construction/start-up period and a twelve month monitoring and evaluation period.

c. A Long-Term Role for Model Community Material Recovery Programs

The Clean Michigan Community model program was created in an era when no MRFs existed in Michigan and demonstrating weekly curbside recycling was considered a challenge.

Today, however, many of the first generation of recycling, composting and source reduction programs have been put in place. These programs have achieved diversion rates of 30 to 45 percent across the nation in communities of all sizes.

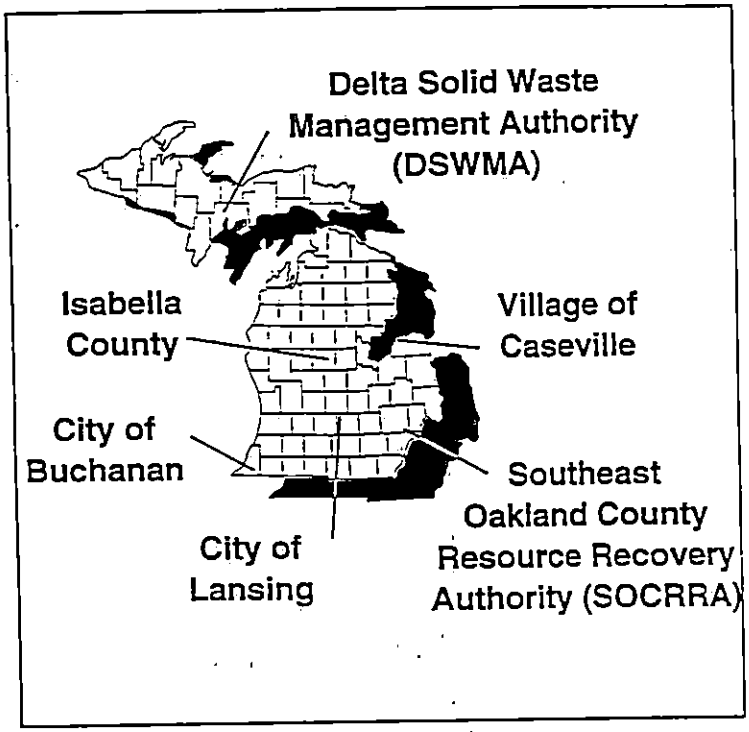
Communities are now examining how to best achieve diversion levels in the 55 to 75% range. These will require overcoming far greater challenges and involve greater risks.

This next generation of recycling programs are the challenge that may be most suited to continued application of a CMC type model grant program. As shown in this report, model grant programs do reduce risk and create an incentive for action - all desirable features of state support for the continued development of the material recovery infrastructure in the U.S. and across the world.

This will perhaps be the mission of the next generation of Clean Michigan Communities!

SUMMARY OF THE SIX CMC PROGRAMS

In 1993, six Michigan communities brought on-line various components of comprehensive recycling, composting and resource recovery education programs. The efforts of these six communities comprise the Clean Michigan Community (CMC) Program, a partnership between the Michigan Department of Natural Resources (DNR) and six communities to establish model recycling and composting programs that would help communities across the State plan and implement solid waste management alternatives.



A description of each of the CMC communities and key features of their recycling and composting programs are listed below. These features include: the type and frequency of recycling and yard waste collection, type of recyclable processing facility, the start-up date and the types of recycling and yard waste-related ordinances adopted by the community. Additional information about the CMC programs is available from the General Program Summary, Case Studies, Fact Sheets and the video. The written materials plus an order form for the video are available in the Starter Kit. Contact the CMCs or Planning & Zoning Center, Inc. at (517) 886-0555 for information on obtaining a copy of the Starter Kit or video.

The six CMC pilot communities are:

- City of Buchanan
- Village of Caseville
- Delta Solid Waste Management Authority (DSWMA)
- Isabella County
- City of Lansing
- Southeast Oakland County Resource Recovery Authority (SOCRRA)

City of Buchanan

The City of Buchanan is one of two small communities chosen for a CMC project. Buchanan has a population of 4,992 and is located in a rural area of southwest Michigan, in Berrien County. Buchanan is a member of the Southeast Berrien County Regional Landfill Authority, which provides landfill disposal for Buchanan and three other communities in the region. Prior to the CMC program, Buchanan provided municipal refuse collection, drop-off recycling service, leaf collection and composting.

The recycling and composting program for the City of Buchanan features the following:

- Weekly municipal collection to single and multi family residential units, and twice weekly collection for 100 small commercial establishments. Source separation into two streams+old newspapers and containers.
- Recycling services provided by private haulers under contract to larger commercial and industrial establishments.
- Recycling drop-off depot operated by the Southeast Berrien County Landfill Authority and volunteers.
- A small materials recovery facility (MRF) owned and operated by City of Buchanan, located at the Authority landfill, where vehicle operator-sorted materials are baled.
- Fall leaf collection by municipal crews, composted in windrows at the Authority landfill. Final compost is used in municipal projects.

- City recycling ordinances that require single family and multi-family source separation of recyclables, source separation of corrugated cardboard containers by commercial generators and a ban on burning yard waste.
- A ban on landfilling of recyclables and yard waste by the Southeast Berrien County Landfill Authority.
- Start-up in November 1992.

The CMC grant to Buchanan provided $606,581 for:

- A recycling collection vehicle
- Recycling collection bins
- Processing facility and equipment
- A brush chipper
- Education and promotion.

Village of Caseville

The Village of Caseville is the other small community chosen for the CMC program. Caseville's population varies from 857 year-round to 2,857 in the summer. Caseville is a coastal resort town in Huron County, Michigan's thumb. Prior to the CMC program, Caseville had no recycling or composting programs in place, and it contracted for solid waste services. Caseville began its recycling collection by contracting with private haulers, and then switched to municipal collection of recyclables in March 1994.

The Village of Caseville's recycling and composting program features the following:

- Weekly, municipal curbside collection of source separated recyclables from single and multi-family residences and commercial establishments.
- A small MRF operated by the Village which performs minimal sorting and processing.
- Two recycling drop-off sites at public parks.
- Curbside collection of leaves and brush chipping, with storage in Department of Public Works yard and land application when sites are available.
- Village ordinances that require source separation of specified recyclables by single family and multi-family residents and commercial establishments and bans the landfilling and open burning of yard waste.
- Start-up in December 1992.

To assist in implementing this program Caseville received $333,541 in CMC grant funds for:

- A collection vehicle, curbside collection containers, and drop-off depot construction
- Construction of a MRF, processing equipment and storage containers for collected materials
- Yard waste collection equipment
- Education and promotion.

Due to difficulties in maintaining support for a community-based recycling and composting program, Caseville is not currently active in the CMC Technology Transfer program.

Delta Solid Waste Management Authority

The Delta Solid Waste Management Authority (DSWMA) is one of two medium-sized communities chosen for the CMC program. DSWMA owns the County's only landfill and services the entire County population of 37,780. Prior to its CMC project, the cities of Escanaba and Gladstone, the Village of Garden and twelve townships in Delta County used a combination of public and private sector refuse collection and recycling drop-off services. Recycling services were provided through Lakestate Industries, a workshop that employs persons with a handicap. Escanaba provided its residents with basic leaf composting.

The Delta Solid Waste Management Authority CMC program features the following:

- Weekly, curbside co-collection of recyclables and solid waste from single family and multi-family residences and some businesses on the same multi-compartment truck run with
- Municipal collection in Escanaba and Gladstone;
- Private co-collection in the out-county area (one of the private haulers makes two passes—i.e. does not co-collect).
- Purchase and expansion of the material recovery facility (MRF), now owned by DSWMA and operated by the private nonprofit Lakestate Industries, with primarily hand sorting of materials.

- Yard waste collection by the cities of Escanaba and Gladstone with out-county yard waste drop-off permitted in Gladstone.
- Compost sites in Gladstone and Escanaba drop-off permitted in Gladstone.
- Yard waste reduction program which provided 950 backyard composting bins to residents.
- Resolutions passed by the Authority to not accept specified recyclables at the landfill once the MRF became operational; to not accept yard waste at the landfill once curbside pick-up started; and to encourage the purchase of products made from recycled materials.
- Policy adopted by the County Board of Commissioners banning the open burning of yard waste.
- Start-up December 1992 - March 1993.

To assist in implementing this program, DSWMA was allocated over $1 million in CMC grant funds for:

- Collection vehicles, drop-off site construction, and curbside bins
- MRF purchase and rehabilitation
- Processing and peripheral equipment
- Compost site work and equipment
- Education and promotion.

Isabella County

The other medium sized CMC is Isabella County, population 54,624. The largest city in Isabella County is Mt. Pleasant, home to Central Michigan University. Prior to designation as a CMC, Mt. Pleasant provided municipal collection of solid waste and the out-county area was served by private solid waste services. There was no significant composting except in the Village of Shepherd. Private and nonprofit drop-off recycling programs were in existence throughout the County.

Following is a brief summary of the features of Isabella County's recycling and composting program:

- Weekly curbside collection of recyclables in the City of Mt. Pleasant by a private hauler with publicly owned equipment for single and multi-family residences. Private collection or drop-off for the institutional/commercial/industrial sector.
- Nine drop-off sites for out-county residents spread throughout the County and at the MRF.
- A publicly owned, privately operated MRF. Processing is a combination of hand and mechanical sorting.
- Yard waste collection (leaves and brush) in Mt. Pleasant and yard waste drop-off at the MRF for out-county residents.
- Land application of yard wastes on farm fields.
- The County and the City adopted local ordinances requiring recycling service in the City of
- Mt. Pleasant by a licensed private hauler which brings recyclables to the MRF, provision of drop-off sites for individuals to deposit recyclables and a County-wide ban on the landfilling or burning of yard waste.
- Start-up began in April 1993.

To assist in implementing this program, Isabella County was allocated over $1.7 million in CMC grant funds for:

- Collection vehicles, curbside and drop-off containers
- Construction of the MRF, including processing and peripheral equipment
- Education and promotion.

City of Lansing

The City of Lansing, with a population of 127,321, is one of two large-sized CMCs. Lansing is the state capital and the 5th largest city in Michigan. Lansing has both public and private sector refuse collection. Public sector refuse collection is volume-based: residents buy specially identified City trash bags through local retailers. Area landfills are privately owned. Prior to the CMC project, both drop-off and pilot curbside recycling programs had been established by the nonprofit group, The Recyclers of Ingham, Eaton and Clinton Counties. A local solid waste hauler and landfill owner operated a drop-off center and small processing facility. Lansing collected leaves in the spring and the fall, composting the materials at a private facility.

Lansing's comprehensive recycling and composting program provides the following features:

- Weekly, municipal, curbside collection of source separated recyclables for single family residences (up to four units), multi-family collection for residences (five units and over) by private haulers and commercial collection by private haulers.
- A municipally owned and operated transfer station where recyclables are transferred from collection

trucks to containers for shipping to end markets.

- Municipal yard waste collection of bagged grass, leaves and bundled branches during the growing season and composting of grass and leaves at a private facility.
- Recycling ordinance that requires source separation of recyclables, bans disposing of recyclables and yard waste in a landfill; and establishes an annual household fee of $55 charged to the July property tax bill.
- Start-up (as dictated by local ordinance) as follows: November 1991—Single family residential collection, September 1992—Multi-family (five units and over) collection by private haulers, July 1994—Commercial sector collection by private haulers.
- A solid waste ordinance that bans the open burning of yard waste.

To assist in implementing this program Lansing was allocated $2.3 million in CMC grant funds for:

- Eleven recycling vehicles and curbside recycling bins
- Funding of a portion of the transfer station and peripheral equipment
- Education and promotion.

SOCRRA

The largest CMC is the Southeast Oakland County Resource Recovery Authority (SOCRRA) in Southeast Michigan. The Authority serves 326,062 persons in 14 of the 61 Oakland County municipalities. SOCRRA is an established public authority with a long history of owning and operating landfills, transfer stations and incinerators. There were public sector drop-off recycling depots in most of the member communities and curbside collection and composting of yard waste prior to the CMC project.

The SOCRRA recycling and composting program features the following:

- Curbside collection from single family and multi-family residences in all fourteen member communities, largely by private haulers.
- Industrial, commercial and institutional (ICI) collection by private haulers or delivery to drop-off sites.
- Processing of recyclables at a central MRF. Processing by hand and mechanical sorting.
- Curbside collection of yard wastes and composting of leaves and grass into a high quality compost through windrows at a publicly owned facility.
- Yard waste reduction program through education and refusal of three communities to collect grass clippings.
- Recycling ordinances passed by each member community requiring the separation of recyclables from the waste stream by single family and multi-family residents.
- Landfill and open burn bans on yard waste.
- Start-up began December 1992 to April 1993 for different communities. The recycling ordinances required recycling for the multi-family (5 units and over) residential sector beginning in 1992, and recycling of corrugated cardboard containers from the commercial sector beginning in 1993.

To assist in implementing this program SOCRRA was allocated over $2,760,000 in CMC grant funds for:

- MRF construction and processing equipment
- Peripheral equipment such as a fork lift, skid loader, chutes, etc.
- Compost site improvements.
- Education and promotion.

Clean Michigan Communities

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Buchanan, Michigan 49107
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CUPPAD Regional Commission
2415 14th Avenue South
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City of Lansing
Public Service Dept.
Operations & Maintenance
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Village of Caseville
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