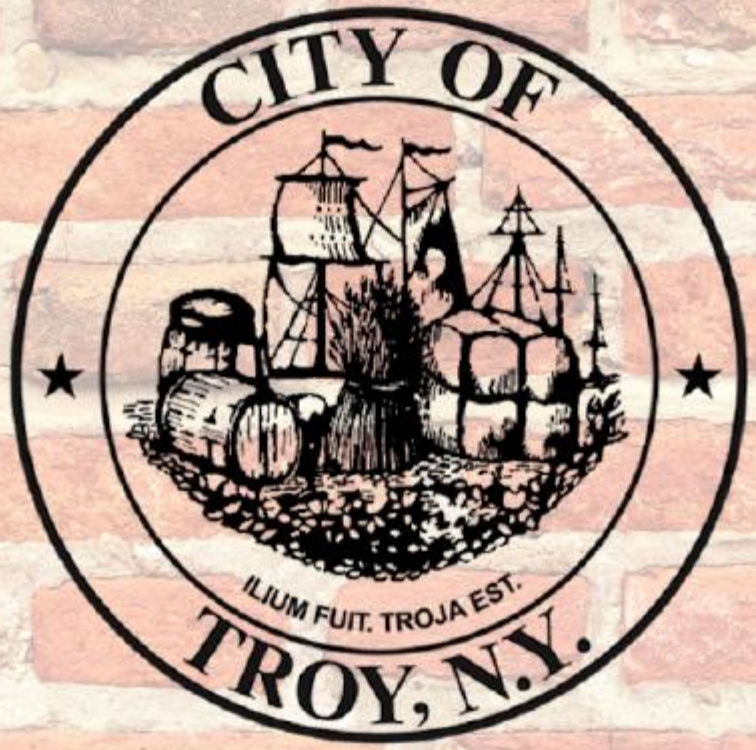
CITY OF TROY, NEW YORK



Comprehensive Recycling Analysis
2020 Annual Report
May 1st, 2021

Along the eastern side of the mighty Hudson River, known as the Cahohatatea by the indigenous Iroquois, stands the scrappy and resilient City of Troy, NY. With an average population of approximately fifty thousand residents, Troy is neither large nor small, and doesn't neatly fit into the box of a typical city.

Troy has a history eleven miles long, beginning with its name, which was decided on by a vote of the people in 1789. In 1816, Troy became a city and in 1900, Lansingburgh became part of the city as well. As it states on the city seal, "Ilium Fuit, Troja est" -Ilium was, Troy *is*.

Troy is and will continue to be a regional leader and a gritty, hard-working metropolis. During the global pandemic of 2020, the City of Troy saw tragedy and collaboration, grieving and learning. It is destined not just to survive, but to thrive. Troy has once again lifted itself up by its bootstraps to rise like the veritable Phoenix from the ashes.

This Comprehensive Recycling Analysis (CRA) report (as required by 6 NYCRR 360.11) (d) will serve as an overview of the City's initiatives (and their respective results) in the areas of recycling, diversion, and solid waste management for the chaotic calendar year of 2020. It will outline the efforts to improve upon the City's handling of materials, resources, solid waste, and community outreach so this information is shared in an inclusive and accessible manner.

The Great Law of the Haudenosaunee (Iroquois) Nation states the impact of decisions should be considered seven generations into the future. It is with this in mind that the City of Troy tackles the complicated issues surrounding solid waste, recycling, and resource management.

This document is meant to be an interactive and "living" document, for the use of community and city; not merely to fulfill the requirement of remitting a report. It will continue to be a roadmap by which our decisions are to be made as well as an opportunity for us to gauge the effectiveness of our objectives and intentions.

This report will outline many of the actions and benchmarking touch-points completed and/or undertaken, as well as the objectives associated with those tasks.

As delineated in the CRA, the seven objectives are as follows:

1) Establish a recycling center
2) Provide guidance for food diversion and a facility of for mulch/compost
3) Develop and plan a re-use center
4) Create clear waste collection procedures and increase collection participation
5) Education and outreach
6) Increase accurate data collection
7) Create a deconstruction permit and provide deconstruction education

A bird-eye view of some of the actions that were taken in relation to these objectives:

1) **Establish a recycling center:**
    a. Upgraded and improved "Alamo" (re-branded as Troy Resource Management Facility) (exhibits 12 and 13)
        i. Appropriately removed/discarded aged materials and as needed have soil-tests performed
        ii. Utilized existing materials and resources as PREBUD (predetermined beneficial use determination) where allowed by NYSDEC
        iii. Reconfigured site to effectively handle and manage resources (exhibit 11)
    b. Filed for registration with DEC to open Troy Resource Management Facility
2) **Provide guidance for diversion/gleaning for consumable foods and operate a mulch and/or compost facility:**
    a. Provided chipped-wood mulch to local farms at no cost
    b. Investigated grant availability for city to undertake a compost pilot with neighboring municipality
    c. Partnered with Syracuse University to use graphics for food waste prevention magnets (appendix 17)
3) **Develop a re-use center:** 2020, no actions taken. Preliminary research being done to determine viability and appropriate time-lining.
4) **Set clear waste collection procedures and increase collection participation:**
    a. Presented 2021 Pay-As-You-Throw (PAYT) budget to City Council for vote (November 2020)
    b. PAYT 2021 budget did not pass: subsequently began work on alternative (hybrid) PAYT plans to present for 2022
    c. Created monthly departmental allocation spreadsheet and protocol to track tipping expenses and MSW/SSR percentages (exhibit 1)

d. Accomplished sustainable increase in diversion percentages (appendix 2 & 3, attached)
e. Partnered with Monroe County to use graphics for recycling bin stickers (exhibit 14)
f. Collaborated with East Greenbush and Bethlehem, NY to develop a series of inter-municipal household hazardous waste (HHW) events for 2021
g. Installed signage on sanitation trucks being used as recycling trucks
h. Increased size of recycling bins (16g) and added second (larger) bin (22g) (appendix 4, attached)
i. Purchased and implemented use of mobile cameras to deter illegal dumping
j. Began development of a GIS mapping system for route maximization (highlighted in education/outreach below)

5) Education and outreach:

a. Solid Waste Advisory Board (SWAB) started remote (zoom) meetings to continue work on objectives
    i. Education and outreach team refined toolkit protocol (appendix 5, attached)
b. Developed more detailed timeline for rollout of objectives and began implementation process and included sub-tasks for benchmarking purposes (appendix 1, attached)
c. Executed contract for ReCollect data aggregation platform and began work on build-out
d. Promoted bag-ban on billboards on two major thoroughfares
e. Ordered re-usable bags utilizing paper-bag rebate funds for 2021 distribution residents in need (exhibit 2, separate document)
f. Procured reusable bags and calendars designed by students from NYSAR3 for distribution to the community
g. Education/outreach committee of Solid Waste Advisory Board finalized development of "community toolkit" protocol
h. Provided public information via multiple interviews with local media organizations
i. Participated in statewide NYSAR3 (NYS Association of Reduction, Reuse and Recycling) Conference, in particular with DEI (diversity, equity and inclusion) panel development and session
j. Partnered with:
    i. Sage College: preliminary build-out of textile diversion program (exhibit 3, separate document)
        1. Received Rubin's Foundation Grant and started work on components included in projects
        2. Adapted goals to work within COVID restrictions (exhibit 4)
        3. Developed bookmarks for outreach regarding textile diversion (exhibit 15 and 16)
        4. Distributed bookmarks at pre-COVID presentation at Farmer's Market presentation event
    ii. Troy Prep: met regarding school/community engagement for textile diversion

1. Roll-out was tabled until post-pandemic

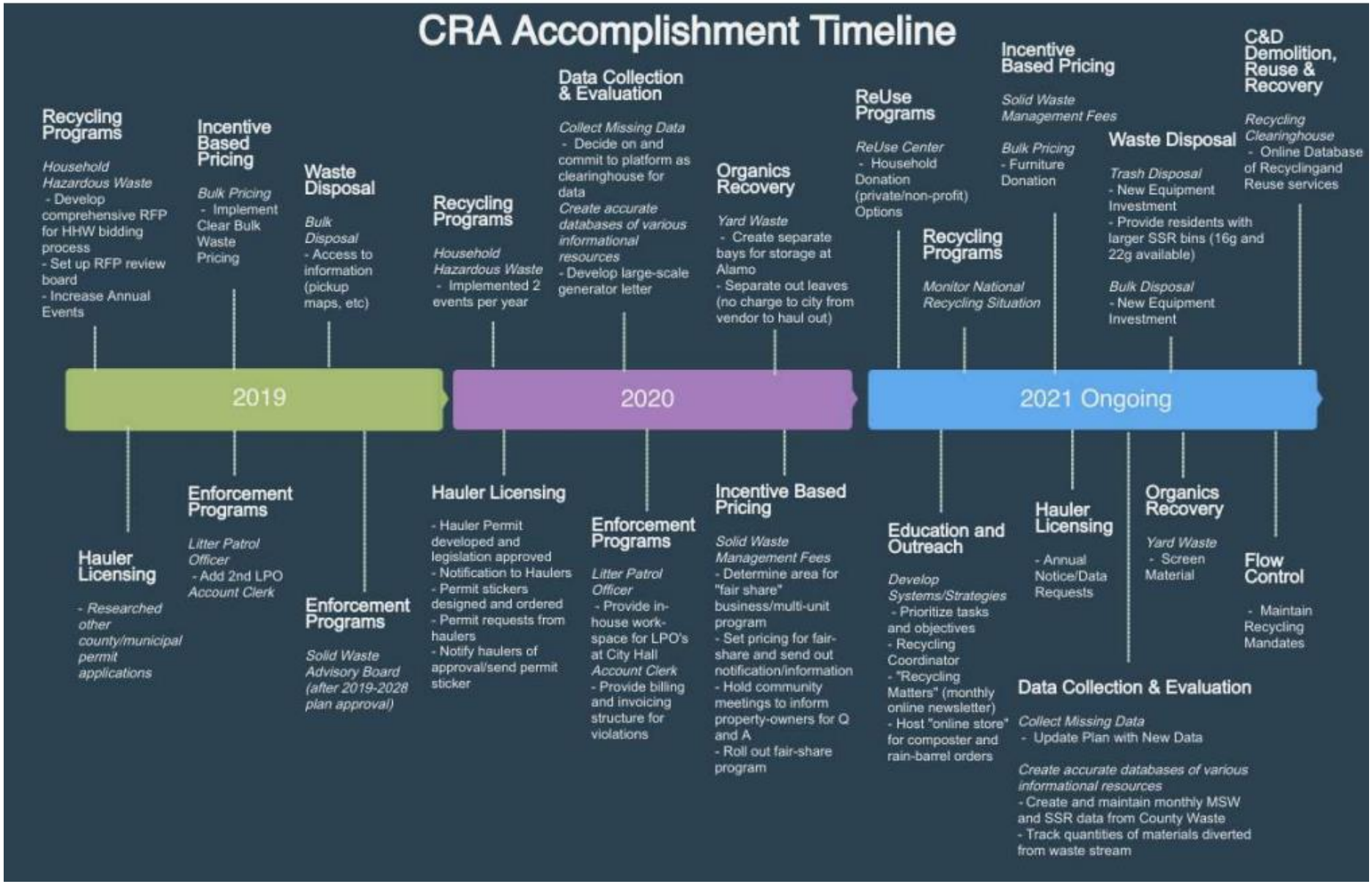
iii. New Visions:
1. Online curricula to support virtual outreach to students/community (exhibit 5)
2. Creation of curricula for re-use projects for grades 2-3 (exhibit 6-7)
3. Worked on database for upload to ReCollect

iv. RPI:
1. Intern partner-GIS mapping software database for route maximization

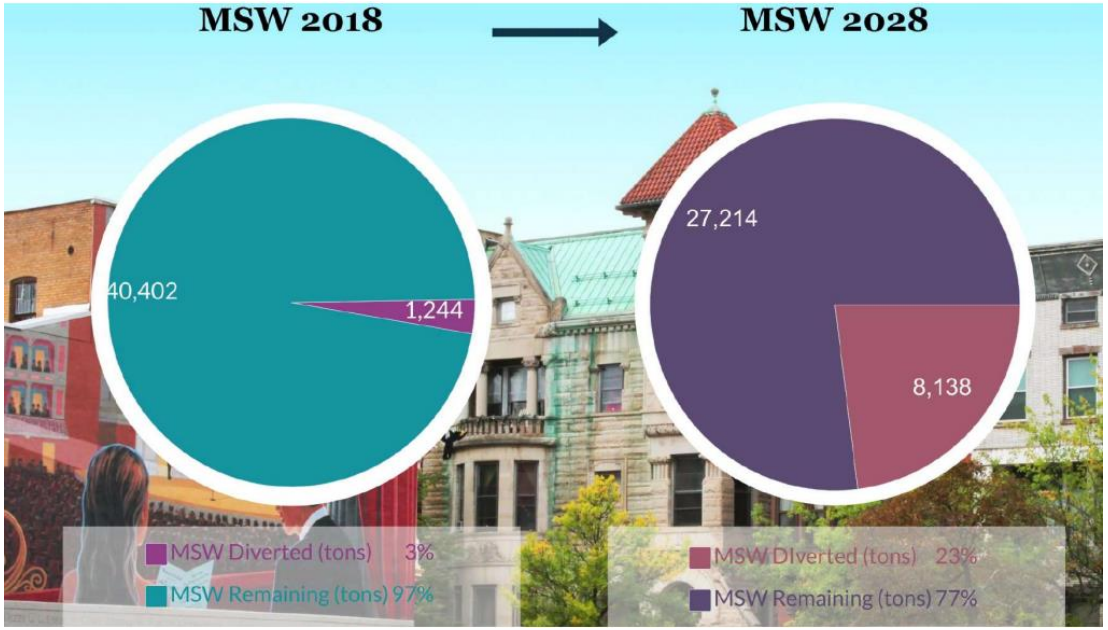
6) **Increase accurate data collection:**
   a. Developed calculation methodology to accurately reflect BUD (beneficial use determination) diversion and avoided expenses (exhibit 10, separate document)
   b. Established a waste-hauling permit
      i. Revised ordinances to reflect addition of this requirement
      ii. Created permit to affix to trucks
   c. Started creation of a large-waste generator letter
   d. Developed collaborative relationship with transfer station and service provider to allow for open communications regarding collection and diversion data
7) **Create a deconstruction permit and education/outreach plan:** Research started regarding comparisons of other municipal examples of deconstruction permit. Work to continue throughout 2021 and 2022.

The City of Troy, NY appreciates the opportunity to provide a subjective review of our work to NYSDEC, as we continue moving toward a cleaner, greener Troy.

Appendix 1


CRA Accomplishment Timeline
Recycling Programs
Household Hazardous Waste
- Develop comprehensive RFP for HHW bidding process
- Set up RFP review board
- Increase Annual Events
Incentive Based Pricing
Bulk Pricing
- Implement Clear Bulk Waste Pricing
Waste Disposal
Bulk Disposal
- Access to information (pickup maps, etc)
Recycling Programs
Household Hazardous Waste
- Implemented 2 events per year
Data Collection & Evaluation
Collect Missing Data
- Decide on and commit to platform as clearinghouse for data
Create accurate databases of various informational resources
- Develop large-scale generator letter
Organics Recovery
Yard Waste
- Create separate bays for storage at Alamo
- Separate out leaves (no charge to city from vendor to haul out)
ReUse Programs
ReUse Center
- Household Donation (private/non-profit) Options
Recycling Programs
Monitor National Recycling Situation
Incentive Based Pricing
Solid Waste Management Fees
Bulk Pricing
- Furniture Donation
Waste Disposal
Trash Disposal
- New Equipment Investment
- Provide residents with larger SSR bins (16g and 22g available)
Bulk Disposal
- New Equipment Investment
C&D Demolition, Reuse & Recovery
Recycling Clearinghouse
- Online Database of Recyclingand Reuse services
2019
2020
2021 Ongoing
Hauler Licensing
- Researched other county/municipal permit applications
Enforcement Programs
Litter Patrol Officer
- Add 2nd LPO
Account Clerk
Enforcement Programs
Solid Waste Advisory Board (after 2019-2028 plan approval)
Hauler Licensing
- Hauler Permit developed and legislation approved
- Notification to Haulers
- Permit stickers designed and ordered
- Permit requests from haulers
- Notify haulers of approval/send permit sticker
Enforcement Programs
Litter Patrol Officer
- Provide in-house work-space for LPO's at City Hall
Account Clerk
- Provide billing and invoicing structure for violations
Incentive Based Pricing
Solid Waste Management Fees
- Determine area for "fair share" business/multi-unit program
- Set pricing for fair-share and send out notification/information
- Hold community meetings to inform property-owners for Q and A
- Roll out fair-share program
Education and Outreach
Develop Systems/Strategies
- Prioritize tasks and objectives
- Recycling Coordinator
- "Recycling Matters" (monthly online newsletter)
- Host "online store" for composter and rain-barrel orders
Hauler Licensing
- Annual Notice/Data Requests
Organics Recovery
Yard Waste
- Screen Material
Flow Control
- Maintain Recycling Mandates
Data Collection & Evaluation
Collect Missing Data
- Update Plan with New Data
Create accurate databases of various informational resources
- Create and maintain monthly MSW and SSR data from County Waste
- Track quantities of materials diverted from waste stream

Appendix 2 and 3



Appendix 4

Appendix 5

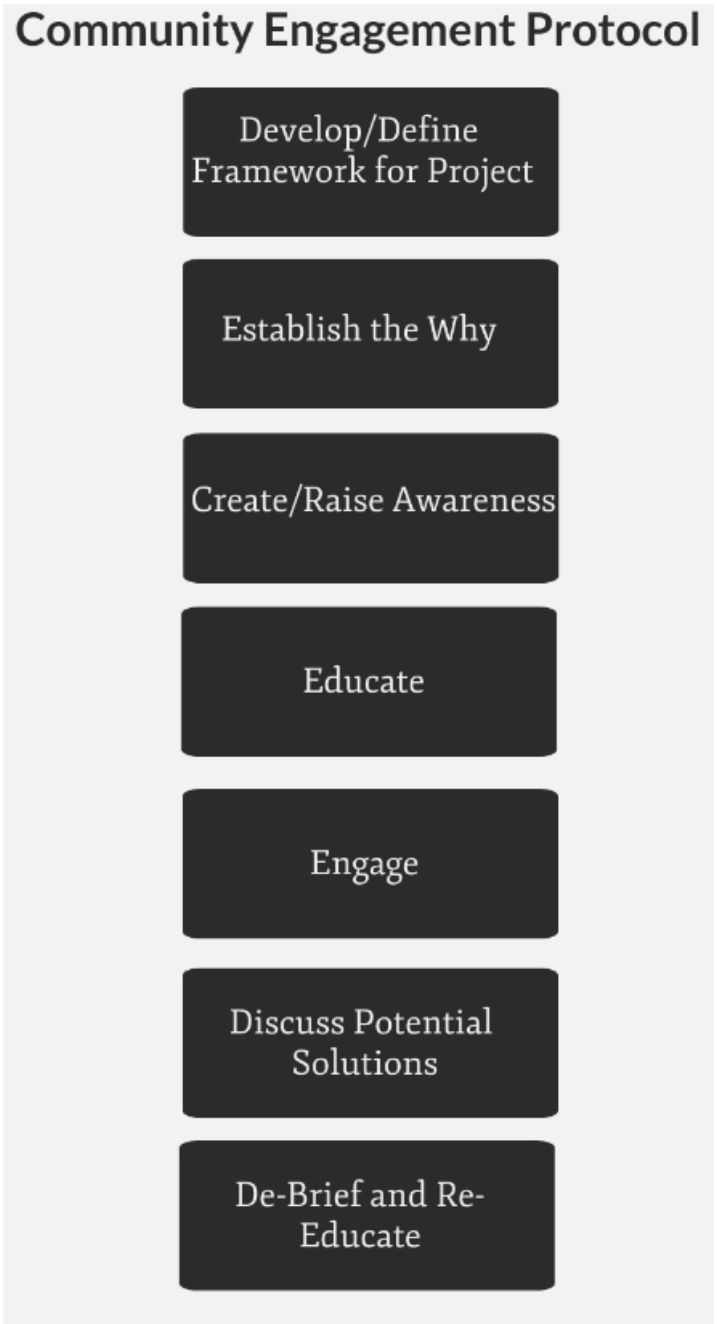

Community Engagement Protocol
Develop/Define Framework for Project
Establish the Why
Create/Raise Awareness
Educate
Engage
Discuss Potential Solutions
De-Brief and Re-Educate

Exhibit 1

Year/Q	Month	Total MSW $	8160 Residential	8170 Municipal	8175 Bulk	MSW WEIGHT (T)	SSR WEIGHT (T)	SSR % of MSW
2020	January	70,542.00	61,390.00	1,695.00	7,456.00	1,131.00	96	8.50%
	February	57,122.00	51,737.00	1,274.00	4,110.00	916	78	8.53%
	March	75,188.00	67,592.00	1,735.00	5,861.00	1,206.00	101	8.38%
1st Q		**202,852.00**	**180,719.00**	**4,704.00**	**17,427.00**	**3,253.98**	**275**	
	April	84,061.00	77,290.00	2,637.00	4,133.00	1,380.00	98	7.11%
	May	80,980.00	76,420.00	2,344.00	2,216.00	1,299.00	98	7.56%
	June	90,310.00	81,455.00	1,845.00	7,009.00	1,448.00	115	8.00%
2nd Q		**255,351.00**	**235,165.00**	**6,826.00**	**13,358.00**	**4,127.00**	**311**	
	July	90, 479	85,276	1,842	3,361	1,451	122	8.40%
	August	81,845	77,202	1,773	2,870	1314	106.5	8.25%
	September	83,250	77,084	1,386	4,780	1,338	120.5	9%
3rd Q		**255,574**	**239,562**	**5,001**	**11,011**	**4,103**	**349**	
	October	83,250	77,741	2,600	2,909	1,297	115	9%
	November	79,381	75,933	2,532	1,916	1,276	113	9%
	December	79,184	74,396	2972	1816	1,272	120	9.50%
4th Q		**241,815**	**228,070**	**8,104**	**6,641**	**3,845**	**348**	
ANNUAL		**955,592**	**883,516**	**24,635**	**48,437**	**15,329**	**1,283**	**8.42%**
2021	January	67,754	64,121	1,750	1,883	1,082	111	10.25%
	February	60,556	57,600	1,505	1,451	967.2	95.1	9.90%
	March	84,327	76,127	1,623	6,577	1,347	125.3	9.30%
1st Q		**212,637**	**197,848**	**4,878**	**9,911**	**3,396**	**331.4**	

Exhibit 2

Exhibit 3

[EXHIBIT 3 Textile Recycling Student Presentation.pdf]
(click link to display presentation)

Exhibit 4

Exhibit 5
Rubin's Foundation Grant

Leveraging community partnerships to create educated consumers from the ground up

Purpose:

This project seeks to educate the Troy community in a way that will allow for a more environmentally-just future, by offering differentiated learning styles for more complete audience capture. This will be done by utilizing the wisdom of industry experts as partner-educators via secondary institution partnerships and governmental support.

Vision:

Creating comprehensive understanding of organic and inorganic lifecycles by developing an extensive web of collaborative partnerships and creating a culture of shared environmental responsibility.

Mission:

Growing more educated consumers by encouraging and promoting systemic change via shared responsibility and ownership for development, implementation and continued engagement in education.

Project outline:

"Live-what-you-learn" recycling/environmental outreach materials will be developed by using collaborative energies and resources of education and industry. This will be accomplished by having industry experts provide specific information on mechanisms of diversion to education and/or sustainability majors at Russell Sage College and RPI as well as having students cultivate additional resources through team-researching. Through a service-learning approach, these institutions of higher learning will translate the information into a format that is both interesting and engaging for the various stakeholders in the community.

The college students would benefit by designing materials appropriate for use with various audiences thus creating a legacy project and leaving a permanent footprint on the City of Troy. Through a mentoring approach, the college students will work with high school students who in turn will oversee the distribution of the information to their younger peers in middle and elementary schools. This creates a significant impact by creating a culture of environmental stewardship in a generation that has the highest stake in continued engagement with the planet. This level of participation has the opportunity to improve student self-confidence, mental health and personal accountability.

The scaffold approach creates an opportunity for civic engagement with all members of the community in ways they are able to internalize responsibility. It allows for multi-generational learners to receive the information in a format that works for their individual learning styles, thus engaging them where they are rather than in a generic manner. As a simple example of this diversified learning approach, there will be opportunities for community members to be involved in a "public painting" of a problematic site, thus bringing visibility to the opportunities that lie within the challenges of managing this program.

The project outcome:

Success of this project will be evident in a more informed/engaged community, with a focus on environmental stewardship and the ability to reduce waste handling expenditures for the City of Troy, its residents and business. The environmental effect of such a program would impact the community for generations to come, by providing a strong foundation for additional initiatives to be built upon. This prepares the municipality for initiatives aimed at continued materials diversion and ecological rehabilitation of long-ignored or "environmentally incapacitated" areas in the city. It also allows development potential for new cottage industries utilizing these commodities as building blocks for their businesses.

Specific aspects of implementation of this project would include availability of funds for training and stipend for block-captains in hard-to-engage neighborhoods. This train-the-trainer protocol leverages the credibility of neighbor-to-neighbor (information on an organic level) learning and establishes a deeper level of trust at the outset. Another consideration made in this process is the necessity of having resources available for community members who may be food-insecure or do not have access to childcare. By providing food and childcare for community meetings and events, it will allow individuals and families who may have previously not been able to participate in events to be included in the process.

In turn, this outcome would create new job opportunities and additional reasons for visitors and patrons to come to the city. A well-engaged community has the possibility of impacting areas as vastly differentiated as trash-to-art, food-waste to food gleaning and from landfilling of textiles to recycling and reuse.

While this project and its initiatives are already in the preliminary stages of development, having access to (and the opportunity to work with) a Rubin Fellow will enhance and leverage the program and greatly abridge the roll-out time, bringing a level of preparedness and readiness that the city doesn't have the capacity to provide currently. The expertise of a professor with access to additional educational resources is invaluable to the success of this project. The faculty fellow will act as a liaison between the different partners, aid in the development of educational materials and coordination of the project. The partnerships include City of Troy, Russell Sage College, RPI and industry experts.

Estimated budget: $14,500

1. **Stipend for Emilly: $3,500**
2. **Software package: $8,000**
3. **Food and Childcare for community meetings and events: $1,200**
    a. Food and Childcare expenses for one meeting per month in the community
4. **Training and stipend for block-captains in hard-to-engage neighborhoods**: **$1,800**
    a. Stipend for block captains: (2 block captains, @$75 per month for 12 months)
5. **Community engagement events with educational components: (**at the expense of the City of Troy)
    a. Promotional and support materials for educational event
        i. Flyers to promote event in advance
        ii. Radio advertising
        iii. Trifold brochures to hand out at events
        iv. Social media (paid advertising) for events

Exhibit 6
(Activity 1-Planters)

Materials

- Soil
- Seeds
- Suggested recycled materials (student provided)
    - Egg cartons
    - Cut in half water bottles
    - Small containers
    - Cans
    - Jars
    - Tissue boxes

Costs

Material	Cost	Amount	Store
Soil	7.94$	1 Cu Ft	Amazon
Seeds	11.59$	1300+ Sunflower Seeds	Amazon

For information on an available $100 grant visit: https://www.opala.org/solid_waste/learning_center/Educational_Resources_Tools.html

Directions

1. Clean and rinse the container your using
2. Cut the container if necessary
3. Poke holes in the bottom of the container
4. Decorate your container
5. Fill the container ¾ full with soil

6. Dig a small hole in the soil
7. Put the seeds in the hole
8. Cover the hole with soil
9. Water the plant regularly
10. Keep the plant in a safe and sunny area

Examples

Activity 1 covers New York Science Learning Standards:

- 3-LS1-1. Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death. [Clarification Statement: Changes organisms go through during their life form a pattern.] [Assessment Boundary: Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction.]
- 3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
- 4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction

3-LS1-1. Students can observe how all the plants have birth and growth within the classroom

3-LS4-2. Students can observe and make comments about differences within their groups of plants.

4-LS1-1 Conduct a conversation with the students about how plants may have functions that help them survive

Exhibit 7
(Activity 2-Bowling)

Materials
Sand or rocks
Ball
Suggested recycled materials (student provided)
Plastic bottles
Pringle containers

Costs

Material	Cost	Amount	Store
Gravel	10.95$	2-lb Bag	Amazon

(to avoid this cost students could be instructed to gather a few handfuls of pebbles from outside or use water to weigh the pins down)

For information on an available $100 grant visit: https://www.opala.org/solid_waste/learning_center/Educational_Resources_Tools.html

Directions
Gather ten bottles or pringle containers as pins
Fill each pin ¼ full with rocks, gravel, or water
Decorate the pins
Set the pins up in a triangle
Use a ball to bowl over the pins

Examples



Activity 2 Covers New York State Science Learning Standards:
4-PS3-3. Ask questions and predict outcomes about the changes in energy that occur when objects collide.
3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
PS3.A: Definitions of Energy (NYSED) A given object possesses more energy of motion when it is moving faster. (4-PS3-1)
PS3.C: Relationship Between Energy and Forces When objects collide, the contact forces transfer energy so as to change the objects' motions.(4-PS3-3)

4-PS3-3. Before conducting the experiment have a discussion with the students about what will happen when the ball collides with the makeshift pins

3-5-ETS1-1. Talk to the students about what they have that they can make this out of. Ask students how they would create a bowling set

PS3-A. Talk about how the ball has more energy when it is rolling faster

PS3-C Talk about how the energy moves from the ball to the pins when they collide

Exhibit 8

(Activity 3-Instruments)

Materials

- Rubber bands
- Straws
- Balloons
- Suggested recycled materials (student provided)
    - Cans
    - Boxes
    - Plastic bottles

Costs

Material	Cost	Amount	Store
Rubber bands	4.15$	465 bands	Amazon
Straws	7$	300 straws	Amazon
Balloons	8$	120 balloons	Amazon

(to avoid this cost students could be instructed to gather these materials from home)

For information on an available $100 grant visit: https://www.opala.org/solid_waste/learning_center/Educational_Resources_Tools.html

Directions

1. Gather recycled and household materials
2. Show students the examples
3. Allow them to create and decorate their own instruments

(more directions can be give on how to make certain instruments)

Examples








String instruments

Materials

- Rubber bands
- Tape
- Scissors
- Suggested recycled materials (student provided)
    - Boxes
    - Plastic bottles

Directions

1. Gather recycled and household materials
2. Show students the examples
3. Get a box or a bottle with a hole cut out of the side
4. String the rubber bands across the box or bottle so the cross over the hole
5. Secure the rubber bands with tape
6. Decorate the instruments

Examples

Wind instruments

Materials

- Straws
- Tape
- Scissors

Directions

1. Gather recycled and household materials
2. Show students the examples
3. Take a hand full of straws
4. Cut the straw different lengths
5. Line the straws up side by side from shortest to tallest
6. Tape all the straws together across the top
7. Decorate the instruments

Examples

Shaker instruments

Materials

- Rubber bands
- Balloons
- Sticks
- Beads or seeds
- Tape

- Scissors
- Suggested recycled materials (student provided)
    - Cans
    - Plastic bottles

Directions

1. Gather recycled and household materials
2. Show students the examples
3. Fill your can or plastic bottle ⅓ full with beads or seeds
4. Use the scissors to cut a piece of the balloon
5. Stretch the piece of the balloon over the opening of the can or plastic bottle
6. Secure the balloon with tape or stretch rubber bands around the outside of the can or bottle
7. Decorate the instruments

Examples




Activity 3 covers New York Learning Standards:

- 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. *This criteria is fulfilled because it requires kids to work through the design process. The specified criteria is using recycled materials to make their instruments. The constraints are using mostly recycled materials (which will help keep costs low) and the time constraint can be decided by the teacher*
- ETS1.C: Optimizing the Design Solution Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (3-5-ETS1-3) *The students will see different solutions because their classmates will not make the exact same thing. This project will have some trial and error and they can choose to continuously improve their instrument. They can be tested by playing the instruments.*

Exhibit 9
(Activity 4: Toys)

Materials

- Suggested recycled materials (student provided)
    - Bottle caps
    - Paper towel rolls
    - Bottles
    - Popsicle sticks
    - Clothes pins
    - Boxes

Costs

Material	Cost	Amount	Store
Pipe Cleaners	6.95$	324 Pipe Cleaners	Amazon
Googly Eyes	6$	1000 eyes	Amazon

(Ideally this activity will be free as the students will be recycling materials from their home. Things like googly eyes and pipe cleaners could be included but are not necessary.)

For information on an available $100 grant visit: https://www.opala.org/solid_waste/learning_center/Educational_Resources_Tools.html

Directions

1. Gather recycled and household materials
2. Show students the examples
3. Allow them to create and decorate their own toys

(more directions can be give on how to make certain toys)

Examples







Cars

Materials

- Glue
- Scissors
- Suggested recycled materials (student provided)
    - Bottle caps
    - Paper towel rolls
    - Bottles

Directions

1. Gather recycled and household materials
2. Show students the examples
3. Bottle car
    a. Lay the bottle on its side
    b. Glue on the bottle caps as wheels
4. Paper towel roll car
    a. Cut paper towel roll to size

    b. Lay them on their sides
    c. Glue on the bottle caps as wheels
5. Decorate the cars

Examples

Boat

Materials

- Corks
- Popsicle sticks
- Paper
- Scissors
- Glue

Directions

1. Gather recycled and household materials
2. Show students the example
3. Glue three corks together horizontally
4. Cut the paper into a sail
5. Glue the sail to a popsicle stick
6. Glue the popsicle stick sail perpendicular to the corks

7. Decorate the boat

Example

Plane

Materials

- Popsicle sticks
- Clothes pins
- Glue
- Scissors

Directions

1. Gather recycled and household materials
2. Show students the example
3. Cut the popsicle sticks to the size you want the wings of the plane
4. Glue the popsicle sticks to the clothespin as shown in the example
5. Decorate the plane

Example

Foosball

Materials

- Boxes
- Ball
- Dowles
- Action figures
- Scissors
- Glue

Directions

1. Gather recycled and household materials

2. Show students the example
3. Cut holes in opposite sides of the box as goals
4. Cut small holes in the other sides to put the dowels through
5. Put the dowels through the holes as shown in the example
6. Glue action figures to the dowels
7. Decorate the foosball table

Example

Figurines

Materials

- Googly eyes
- Pipe cleaners
- Paper
- Tape
- Glue
- Scissors
- Suggested recycled materials (student provided)
    - Bottle caps

- Paper towel rolls

Directions

1. Gather recycled and household materials
2. Show students the examples
3. Cut the paper towel rolls to the size you want
4. Add googly eyes, pipe cleaners, paper cut outs, bottle caps, ect. to customize it
5. Attach the extra pieces to the paper towel roll with tape or glue
6. Decorate the figurines

Examples


Activity 4 covers New York Learning Standards:

- ETS1.C: Optimizing the Design Solution Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (3-5-ETS1-3) *The students will see different solutions because their classmates will not make the exact same thing. This project will have some trial and error and they can choose to continuously improve their toys. They can be tested by playing with them.*
- Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Generate and compare multiple solutions to a problem based on how well they meet the criteria and

constraints of the design problem. (3-5-ETS1- 2)*This criteria is fulfilled because it requires kids to work through the design process. And construct their own ideas. They will have to use scissors and glue to make their toys. The specified criteria is using recycled materials to make their instruments.* ***The constraints are using mostly recycled materials (which will help keep costs low) and the time constraint can be decided by the teacher designing multiple solutions Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem.***

- ETS1.A: Defining and Delimiting Engineering Problems Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-5-ETS1-1) ***explanations***

Exhibit 10

(Separated commodity weights)

2020 separated commodities weights
INORGANIC MATERIALS:
Tires:
44,990 pounds= **22.5 tons**

Metals:
51,500 pounds= **25.75 tons**

Textiles:
10,064 pounds= **5.03 tons**

Electronics:
17,019 pounds (as per ReTrac reporting) = **8.5 tons**

TOTAL inorganic diversion waste: 123,620 pounds= 61.8 tons
Avoided costs: $3,783

ORGANIC MATERIALS:
Leaves and yard materials*:*
2 loads of mixed yard materials weekly, plus two weeks of 3 loads weekly, beginning in mid-June, “soft” end-date of 11/30/20 for a total of 42 loads (one load=40 cubic yards) 325 pounds per C/Y
Associated expenses: $0.00

Avoided expenses: $16,710
TOTAL: 546,000 pounds=273 tons
Avoided expenses: $16,710

Branches, brush and stumps:
27 loads branches and brush hauled (one load=80 cubic yards) 300 pounds per C/Y
TOTAL: 648,000 pounds=324 tons
1 load logs and stumps hauled (one load=80 cubic yards): 1,080 pounds per C/Y
TOTAL: 86,400 pounds=43.2 tons
4 loads branches and brush chipped and left on-site (one load=80 cubic yards): 300 pounds per C/Y
TOTAL: 96,000 pounds=48 tons
Combined tonnage=415.20 tons
Associated expenses: Grinding, screening: $4,000 (this includes having over 400 yards of wood-mulch remain onsite for distribution) and haul-out: $10,000 total of **$14,000**
Avoided expenses (additional grinding costs, hauling, plus landfill tip fees): **$43,152 avoided costs**
Avoided costs less associated expenses: $29,152

Street sweepings:
N/A (hold-over and screen/use as PREBUD in 2021)

DPU recovered materials:
Sludge: 4,590 tons
Millings: N/A
Avoided per-ton disposal costs: $115 per ton
Total bio-solids tonnage=**4,590 tons**
Avoided costs $517,850

Food-scrap (Transition Troy):
36,400 pounds=**18.2 tons**
Avoided costs: $1,114

TOTAL COST AVOIDANCE (avoided less associated): $568,609
TOTAL MATERIALS DIVERSION WEIGHT: 5,340 TONS

Exhibit 11

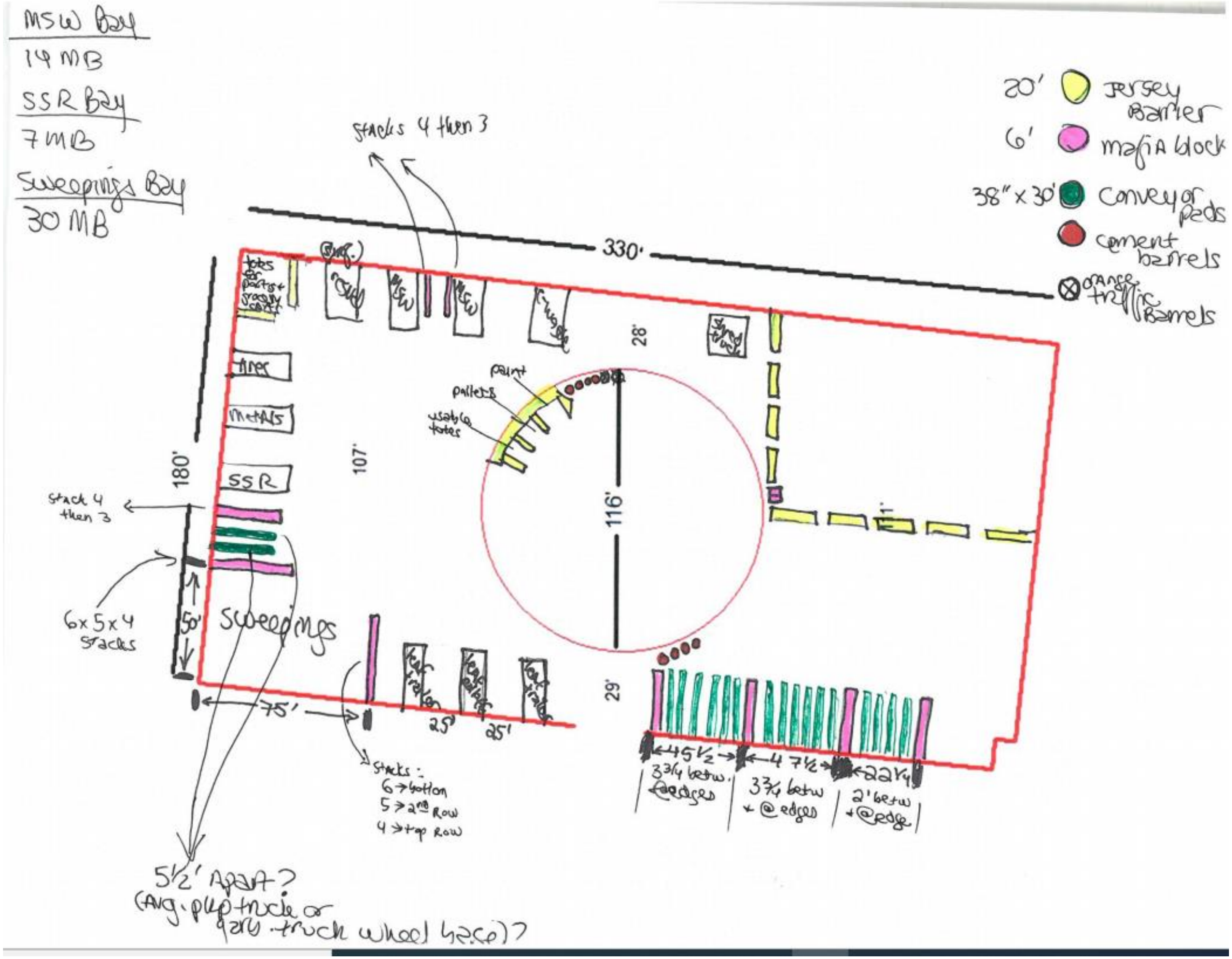

MSW Bay
14 MB
SSR Bay
7 MB
Sweepings Bay
30 MB
stacks 4 then 3
20' Jersey Barrier
6' mafia block
38" x 30' Conveyor pads
cement barrels
orange traffic barrels
330'
180'
107'
116'
28'
29'
paint
pallets
usable totes
metals
SSR
stack 4 then 3
6x5x4 stacks
50'
sweepings
75'
25'
25'
stacks:
6 → bottom
5 → 2nd row
4 → top row
45½
47½
22¼
3¾ betw. & edges
3¾ betw + @ edges
2' betw + @ edge
5½' apart?
(avg. pickup truck or garb. truck wheel base)?

Exhibit 12

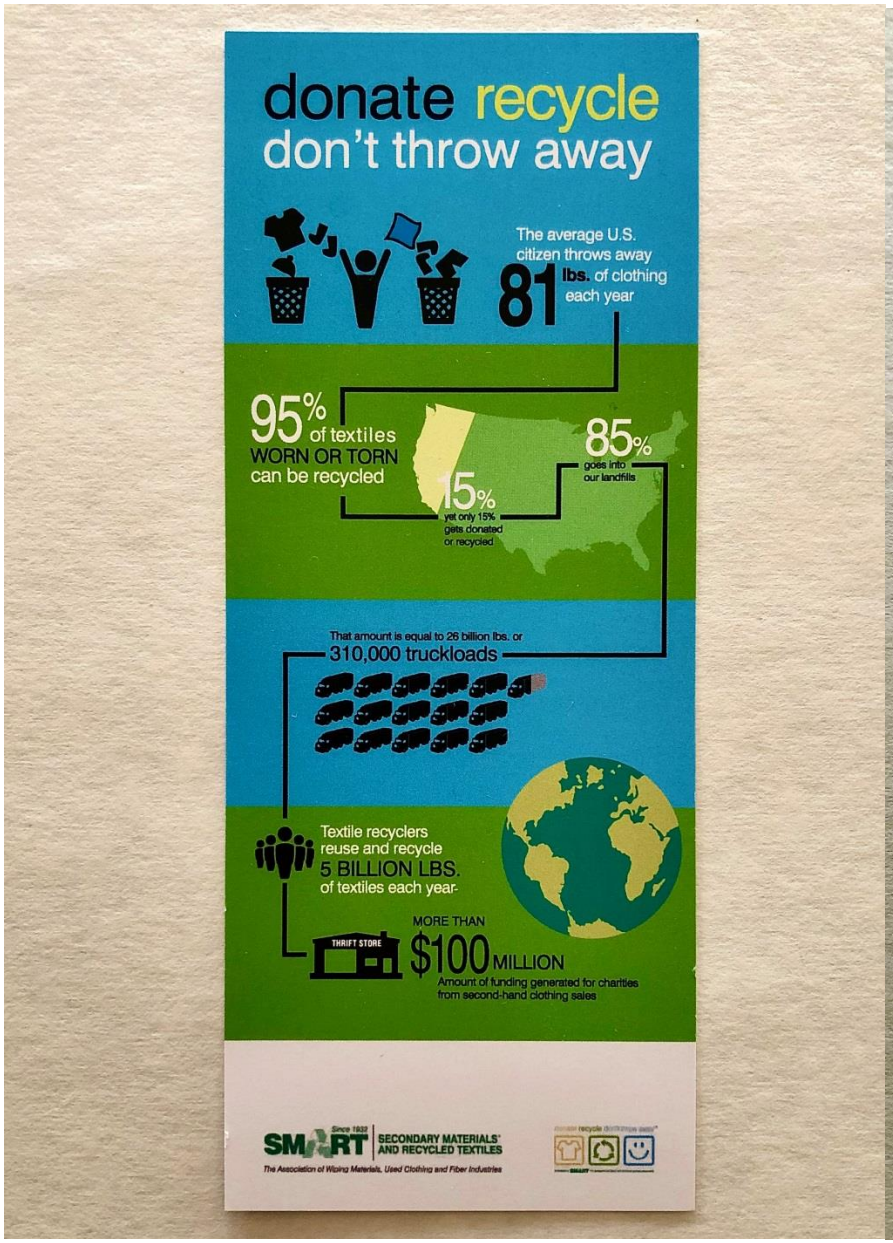
Exhibit 13


TROY
RESOURCE
MANAGEMENT
FACILITY
NO ACCESS
NO DUMPING
NO TRESPASSING
FACILITY
MONITORED
BY VIDEO
SURVEILLANCE

Exhibit 14


MIXED RECYCLING
EMPTY
CLEAN
UNBAGGED
PAPER
• Empty cartons (caps attached)
NO liquids
• Empty and flatten boxes -
Do NOT tie together
• Contain shredded paper
in a paper bag or box
PLASTIC
• Empty bottles, jugs,
jars, and tubs -
NO food or liquids
• Reattach lids and caps
METAL
• Clean foil
• Empty cans -
NO liquid, food or product
• Reattach lids and caps
GLASS
• Empty bottles and jars of any color -
NO liquids or food
• Reattach lids and caps
• NO bags
• NO foam
• NO liquids
• NO food
• NO cups
WHEN IN DOUBT, THROW IT OUT!
www.troyny.gov/recycling/
CITY OF TROY, NY

Exhibit 15 & 16



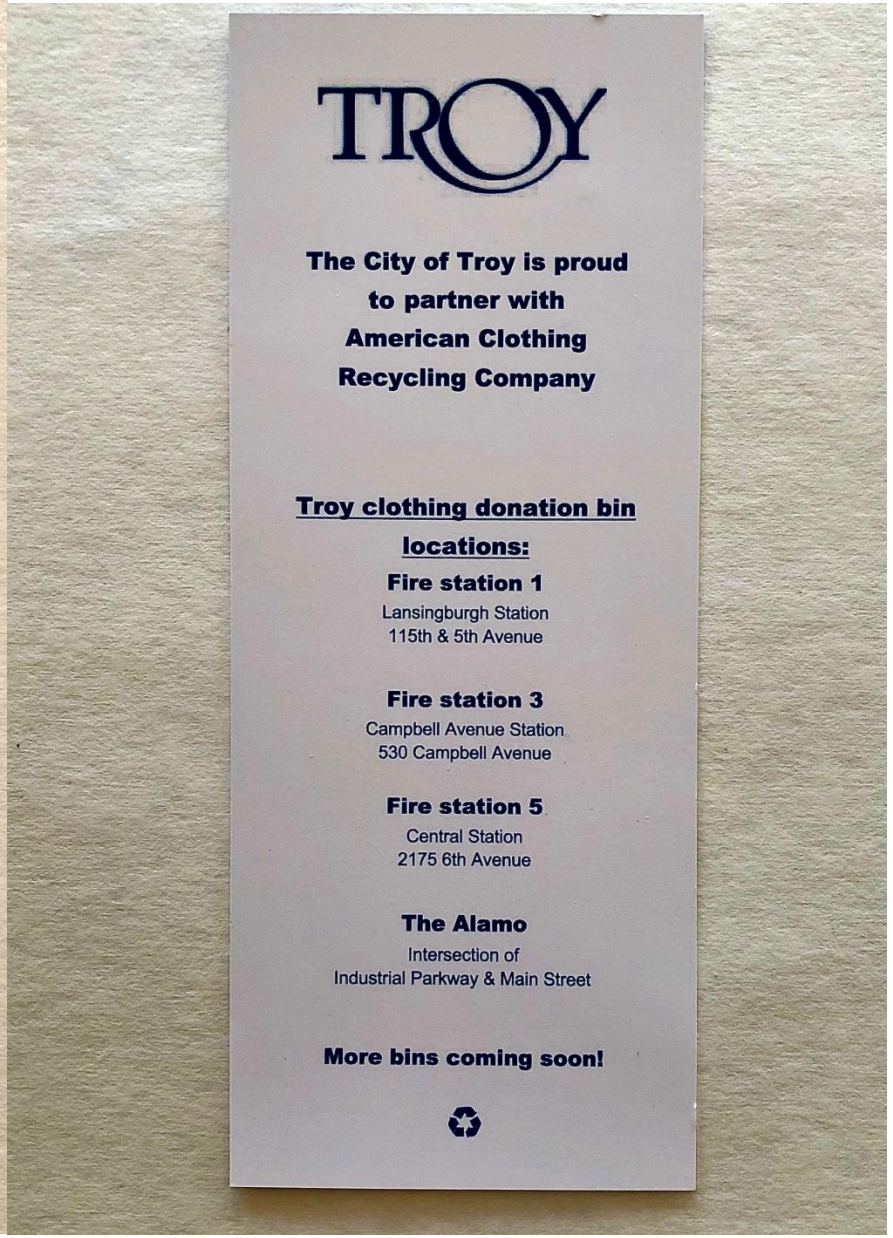


Exhibit 17


PLEDGE TO FIGHT WASTED FOOD
EAT ALL LEFTOVERS and PERISHABLE FOOD FIRST
DONATE EXTRA FOOD FROM YOUR PANTRY and GARDEN
MONDAY
TUESDAY
WEDNESDAY
MAKE A WEEKLY MEAL PLAN and GROCERY LIST BEFORE SHOPPING
PROPERLY STORE, FREEZE, and CAN PERISHABLE GOODS
CHECK THE REFRIGERATOR, FREEZER, and PANTRY BEFORE SHOPPING
COMPOST ALL INEDIBLE FOOD SCRAPS
VOLUNTEER AT A LOCAL FOOD PANTRY or MEAL CENTER
CITY OF TROY, NY
Syracuse University
Center for Sustainable Community Solutions