PROJECT

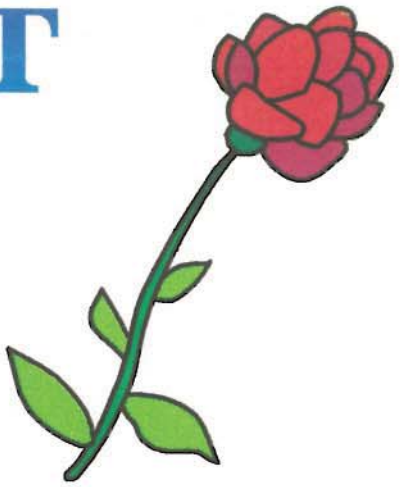
BIOSPHERE

IN

OUR

METROPOLITAN

ENVIRONMENT



Students:
Vania Bernardino
Ronald Cardoso
Christopher Cabrera
Candice Valente

Coach: Mr. Manuel Oliveira
Ann Street School. Newark NI

CARNEGIE SCIENCE CENTER

One Allegheny Avenue
Pittsburgh, PA 15212-5850
Tel 412 237 3400
http://www.csc.clpgh.org

March 11, 1999

Dear Coach,

Thank you for assisting your team to successfully complete their entry for the Bayer/NSF Award for Community Innovation. We would like to honor your team for their effort. Each team member and their family have been invited to attend a special day sponsored by Bayer and Carnegie Science Center on Saturday, April, 1999. Please join your team in celebrating their accomplishment.

The day will include: time for you and your family to explore Carnegie Science Center, refreshments, and a special program for all participants. During the program, semifinalist teams will be asked to give a short overview (no more than 5 minutes) of the problem they chose, the research they conducted, and the solution they proposed.

I will contact the three semifinalist teams on or around March 29, 1999. Semifinalist teams will be invited to spend the night at Carnegie Science Center and participate in our Overnighter. (Each semifinalist team member and the coach will be able to bring one guest for the Overnighter.) The Overnighter will end at 10:00 am on Sunday April 11. I will give the semifinalists more details about the Overnighter when I call.

On April 10, Carnegie Science Center will be open from 10:00 am -9:00 pm. Registration will be in the main lobby of Carnegie Science Center. Refreshments will be served from 6:00-7:00 pm with the Recognition and Awards Program beginning at 7:15 pm. Parking will be available in the Science Center lot, the cost is $3.00/car.

Please RSVP by calling (412)237-1806 before March 30, 1999. We will need to know how many people from your family will attend (we will supply up to 4 exhibit passes per family). If you need directions to Carnegie Science Center, they can be provided. We look forward to seeing you at the Science Center on April 10.

Sincerely,

Jessica Stricker
Regional Coordinator

P.S. Carnegie Science Center is located on the North Side of Pittsburgh, right next to Three Rivers Stadium.

The Issue

Our city, Newark, is a wonderful place, with a diversity of tradition and cultures. However, it is the largest urban city in New Jersey, with some negative city characteristics. There is something missing a sense of community among the people in our neighborhood. We would like to bring more of what nature has to offer to our city's environment.

Not many people see the beautiful parts of nature, like exotic plants and animals. They do not interact with nature and do not get to marvel at the pride of planting a tree or catching a butterfly. Most importantly, they do not feel the peacefulness of nature or appreciate the coexistence of all these organisms.

So we looked for a way to combine these problems to find a solution. We realize a way to bring the community together would be through nature. By creating a biodome, we could have a place where people in our community could come together to raise plants and animals. For example, people who have an interest in planting, such as retired senior citizens, could come and spend their time in the biodome with Ann Street School students.

Unlike our surrounding suburban schools, our school grounds are all asphalt. Our only connection with nature has been confined to the classroom via video and laserdisc. Building the biodome as a new addition to our school will afford us students the opportunity to appreciate the environment through all of our senses.

Not only would this bring different species of nature to our community, but it would bring different people in our community together. When everyone gets involved in something productive, our entire community will benefit by gaining an extraordinary sense of pride and family.

Research

To begin our research, we first needed to find a place to build our biodome. We asked the principal of our school where would be the best place to plot our biodome. He insisted on using our cubbyhole because our school is going to be renovated soon, and this area would be blocked off.

As soon as we had access to the cubbyhole, we took measurements of our area and pictures with our digital camera. The purpose of taking these pictures was to show the people we wanted to interview what our area was composed of, and how it was shaped.

After all this was completed, we thought of who we could talk to that would help us with our questions. After a little research, we found out that Rutgers University specialized in agricultural development. We got the number and asked our teacher if he would be able to call the college and set up an interview with someone who specialized in that area. Our teacher was able to set up two interviews, one with Mr. Brian Saucer, program administrator for the (New Jersey- NASA's Specialized Center of Research and Training) NJ- NSCORT/NJ EcoComplex, and the second interview with Mr. David Specca, manager of Rutgers State of the Art Greenhouse.

We went to Rutgers University and sat down for a meeting with Mr. Saucer. Our biggest concern was that we had a low level of incoming sunlight for the location we had to work with. We asked him what to do in order to help solve this problem and he recommended artificial and supplemental lighting. We also asked him what kind of animals and plants we should keep in this biodome. He said that the best kind of plants were rainforest plants because they live at the floor of the forest and are always covered by larger trees and therefore did not require a lot of

sunlight. He recommended insects such as earthworms, wasps, and ladybugs, to kill pests that would occasionally come in.

One of the most important questions we asked Mr. Saucer was about what kind of roof we should have. He said that a triangular, shatterproof roof would be the best. He suggested this so that it would not collapse when a large quantity of snow fell on it. Mr. Saucer was very helpful with all the issues we had for him.

Our second interview was with Mr. Specca at the Burlington County State of the Art Greenhouse. Here we got to see hands-on for the first time a greenhouse, where he took us for a tour. As we went along, we asked Mr. Specca questions of things we noticed. One question we asked involved sustaining a comfortable temperature. He said that 70°-75° F was a good overall temperature. We then noticed that he kept all his plants spread apart. When we asked him why this was, he explained that keeping enough space between plants allowed for them to grow short and wide. Consequently, this would reduce the amount of space occupied. We were also concerned about ventilation. Our worry was about excess heat entering the biodome from the school. Mr. Specca recommended venting out using fans, like he used in his greenhouse.

As we walked around, we noticed a strange little box hanging from the ceiling. It seemed to be dispensing some type of gas. Mr. Specca said that was CO_2, the purpose for this was to allow carbon dioxide gases to enter plants through the process of photosynthesis. Also, in the greenhouse, Mr. Specca pointed out a beehive which has specially trained honeybees which flew out and helped to pollinate the plants.

After the tour was finished, we sat down and asked Mr. Specca some additional questions. One important question we asked was about getting light into the biodome. He told us to paint our walls white, in order to reflect sunlight all around the biodome. This will keep an

even distribution of light throughout the biodome. Mr. Specca also expanded upon Mr. Saucer's idea of roofing by suggesting a polyurethane roof, which is durable and has the ability to absorb sunlight. Our second interview was extremely helpful visually since this was our first time seeing a greenhouse and also in order to get ideas on how we would want to arrange our area.

We were also introduced to Mrs. Haidy Oliveira, our teacher/coach's wife who is a mechanical engineer at the Naval Air Warfare Center, Aircraft Division, Lakehurst, NJ. At her job she uses a program called AutoCad14 to design drawings for aircraft carriers. She worked with us to teach us the basics of using AutoCad14. Using the measurements we gathered from measuring lengths and widths of walls, pipes, and anything else contained in that area, we entered them into the program. From this we created a basic drawing of a scaled down version of the area. Then we also developed a three-dimensional copy of the same scale, by giving our original drawing a thickness. The drawings we created helped us to see what sections will be useful for storage and which sections will be better for observations and testing.

The last part of our research involved using Encarta Encyclopedia to look up terminology and get a better idea of what biodomes are, and also using two Internet web sites that we found dealing with Biodomes, www.ville.montreal.qc.ca/biodome/ebdm.htm and www.rof.net/yp/biospace/biodomes.html. The first site has information concerning the Montreal biodome and the second site was used to get some background information on existing biodomes.

We also met with Mr. Tom Manning from Rutgers University who is a Bioresource Engineer that is involved in constructing Biodomes. He came to visit our school and look at the site where we want to build our biodome. The information he provided assisted us greatly with deciding the best path to take for our solution.

Testing

For our testing we used a computer program Sierra Garden Encyclopedia. Mrs. Haidy Oliveira introduced us to this program and suggested using it for our testing data. The program contains information about types and living conditions of plants as well as explanations of how to grow and care for plants. The program also helped us search for specific plants that we wanted, such as fragrant plants.

Using the answers we received from our interview, we knew what qualifications and characteristics we needed. We knew we needed low light, and from our measurements we knew the necessary widths of the plants. The program helped us find plants for problem condition areas, such as the little amount of sunlight we have. We placed height and width restrictions on the plants that were able to live with the light. This narrowed down the number of plants we grew. We picked the few that we liked and browsed through the plant file. From the different plant files we saw problems such as, spider mites or thrips, so this further reduced our selection.

We used this procedure to find plants (for the border of our walkway and for our test plants), vegetables, and trees. Each time we placed different height and width restrictions, making sure no plants were poisonous. What we did not ask for was a specific color or blooming season. That was not of major importance to us.

First we researched different tree types. We planned on having two trees in our area. But we wanted to make sure that they were not poisonous and that they could grow in partial or full shade. We were left with about seven trees, and we liked the look of five of them. These were the American Smaragd Arborvitae, the Wattle, the Thuja Occidentails, the Acar Buergeranum Formosanum, and the Leptospermum Scoparium (Pink Pearl), but we found a few faults. For example, the Thuja Occidentails had a possible height of 20-30 feet, the American Smaragd

Arborvitae was susceptible to spider mites, and the Car Buergeranum Formosanum grew only 3-8' making it look more like a bush. So we narrowed it down to the Wattle and the Leptospermum Scoparium, but we chose the Leptospermum because of its bright pink flowers.

We used the same procedure for our border and testing plants. For our search we made sure they were not poisonous, they were able to handle the light, and that the testing plants were container plants or plants that can thrive in a container. For our border plants we were left with five, which we narrowed down to three; the Centaurea Cyanus, the Eschscholzia California, and the Buxus Sempervirens. But the Buxus grew too high, 4-5 feet. Of the two left, we liked the Eschscholzia better, because it too had very bright flowers.

For our testing plants, we wanted to have plants that we can monitor growth and observe ways in which the growth would change. We compared the plants' blooming season and we saw which ones were more attractive and enjoyable to children.

After our search we were left with six, the plants were Freesia, the Common Garden Petunia, the Iris Xiphium, the Camelia Japonica, the Rosa "Tour de Malakoff", and the Rosa "Camaieux". We stayed with the two Rosas, the Iris, and the Petunia. The Freesia attracted Thrips and the Camelia grew up to 12 feet.

We also tried to find plants that attracted butterflies. But we soon saw that all of these plants, such as the Verbena X hybrida, and Lantana Camera, required full exposure to the sun. This we could not guarantee so we could not plant flowers based on their attraction to butterflies.

Finally we researched vegetables; we felt that vegetables would be a good way to show students the positive effects of growing their own food. We made sure none were poisonous and began our search. We looked over them and chose five; the rhubarb, the carrot, the mustard

greens, the garden peas, and the Anaheim pepper. We stayed with the mustard greens, because the others were either too high, required full sun, or were poisonous.

So in the end, this program helped us by letting us know what plants we could grow and why. It also helped us because we were able to see how to grow and care for them with a step by step plan. It was much faster than using a regular encyclopedia and much more detailed. Furthermore, we were given quick explanations on things we otherwise would not have understood, such as what aphids and blooming seasons are. We now know each plant we plan on using and the basic information on all of them.

The Solution

Our biodome is a very promising project. To make our biodome a reality, we would first have to get our ideas approved by the Board of Education. By doing this, we will have full permission to start with the construction process. The next important thing to be done is to build the structure to our biodome, which consists of the roof and one side. When we met with Mr. Tom Manning, he said he would be willing to help us with the design of the roof and side. We would then present our plans for the roof and side to contractors and architects. Working alongside them, we would watch over the construction of our polyurethane roof and side. Once the structure is completed, we will concentrate on the interior.

We will begin by working on our layout of the different areas of the biodome and laying the walkway and separating the areas. Supplies and accessories can then be purchased for the different areas of our biodome. We can buy the parts for our hydroponics area, purchase the different plants for our vegetable garden, our testing garden, and our decorative garden. Then we can start to look at how we will maintain everything year long, including the summer months when we're not in school.

Knowing ahead of time that our plans will end up costing more than $25,000 we have already begun to look at how we can get more money for our project. We will be approaching the Board of Education and presenting to them our plans in hopes that they can try to find funding for our project. We have also looked at how we can create even part of our project with the $25,000. We know that within the one-year period we would be able to get approval from the Board of Education to begin building. Contractors and architects could easily be hired, because many of the students' parents in our school have these occupations. We are mainly a community made up of blue-collar workers and this will help us to keep our costs down in

building. Our biggest expense is the cost for the polyurethane roof and side. With the help of Mr. Tom Manning, he averaged the cost to be about $40 per square foot. The area we have consists of approximately 2,000 square feet and the cost would be $80,000. Mr. Manning suggested covering only the first 500 or 600 square feet, which would cost us about $20,000-$24,000. So with this suggestion we can still create a portion of the area we have in mind and if we get additional money we can always add on later. Leaving us with a few thousand, we can pay for some of the labor and purchase supplies. We will be going out to the community where we know we can receive some donations; Matos Masonry for work and materials, nurseries for plants, pet stores for bugs, fish and fishpond supplies. And we will try to get help from major corporations such as Home Depot for electrical, fans, plants and PSE&G (Public Service Electric and Gas) for assistance in setting up our artificial lighting system. By getting our community involved we can cut our costs dramatically in order to create the biggest area we possibly can with the $25,000 within the one-year period.

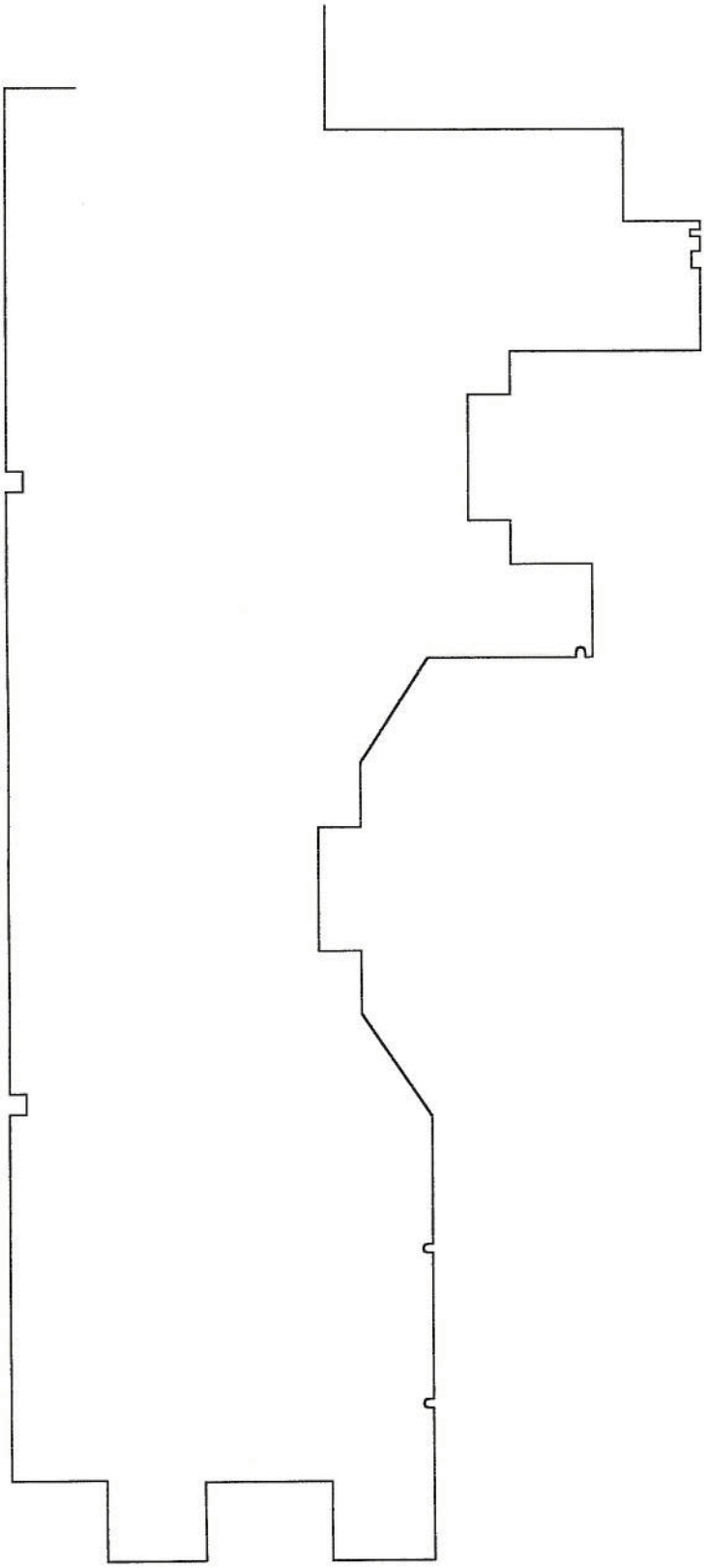
Once the structure is complete we will again be turning to our community for volunteers to help in putting and maintaining the gardens. We are especially interested in getting our senior citizens involved, since they will be available to come to the school during the day and interact with the students by working together side by side. We would create a schedule where students and adults would come at certain times to water plants, turn on lights, maintain a record of our test plants, vegetable garden and hydroponics area, feed the fish and keep track of our supplies. Hopefully if all goes as planned, the biodome will be filled with a rich and beautiful atmosphere.

Now if we have unlimited resources, we would definitely want to build the whole 2,000 square foot area we have proposed. It would also give us the opportunity to create a more state-of-the-art complex, where we would have computer-controlled systems. For example, we would

have a computer set to water certain plants and areas at different needed times. We would also set up computers to measure temperature, the level of carbon dioxide in the air, and the humidity, so that they would automatically increase or decrease the temperature, dispense extra carbon dioxide when needed and adjust the watering time. Also, we can have computers used for other activities, such as turning on and off artificial lights and activating our fans.

In theory, our solution, the biodome, brings nature closer to our community and brings the people in it closer together. The biodome creates an environment in which citizens can interact with nature and learn from it. It creates a peaceful place where people could relax and spend time together.

As you can see, our biodome has a lot of potential. It will be a wonderful addition to our community and a great learning center for our students. As students who do not get to appreciate nature much, we are hoping to make this dream a reality.



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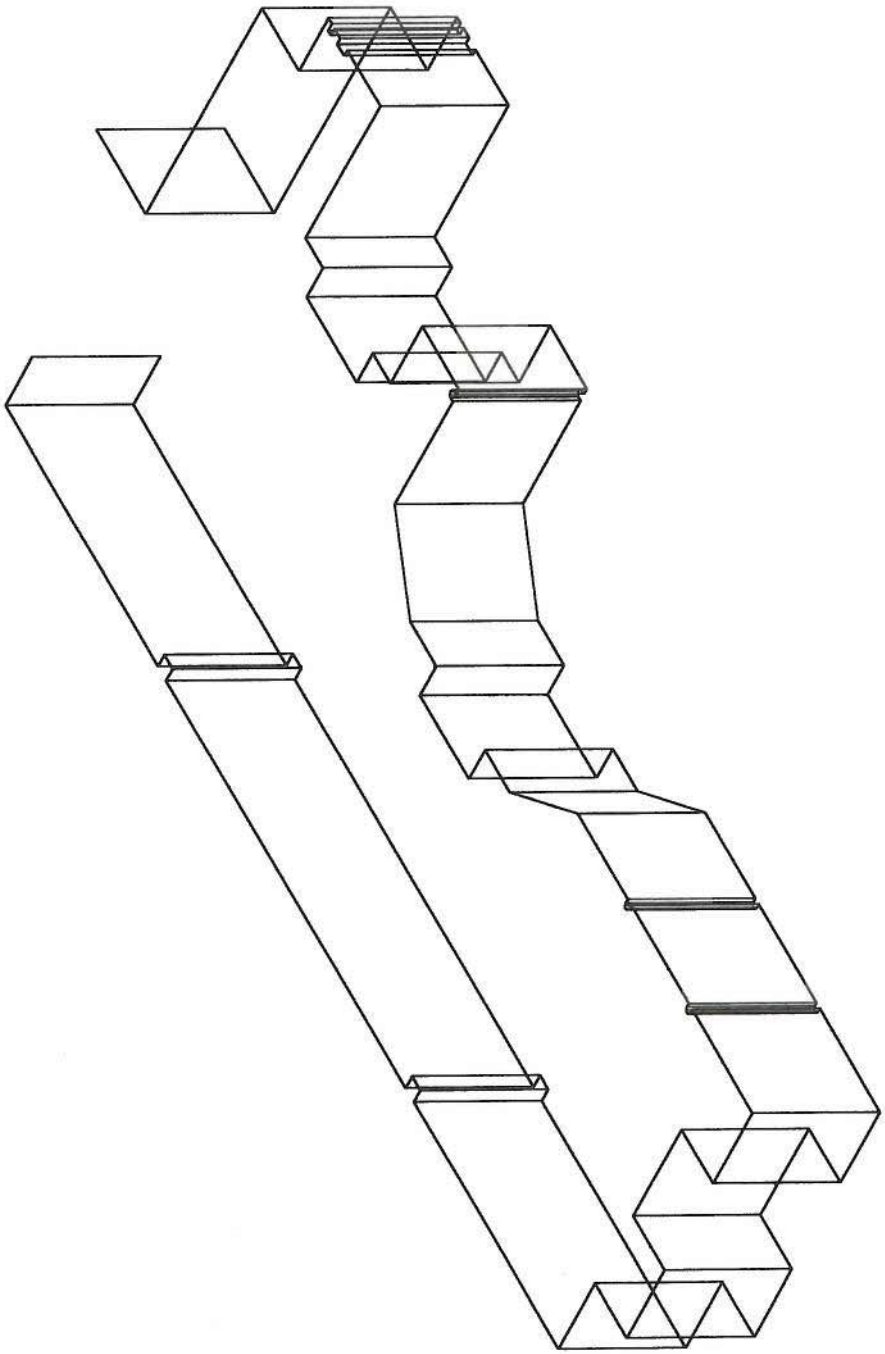


Entry Form

TITLE OF THE ENTRY: B.I.O.M.E. - Biosphere in our Metropolitan Environment

TEAM MEMBERS' INFORMATION

NAME: Candice Valente GRADE: 8
HOME ADDRESS: 88 Ann Street
CITY: Newark STATE: N.J. ZIP CODE: 07105
NAME OF SCHOOL OR ORGANIZATION: Ann Street School

NAME: Ronald Cardoso GRADE: 8
HOME ADDRESS: 94 Komorn Street
CITY: Newark STATE: N.J. ZIP CODE: 07105
NAME OF SCHOOL OR ORGANIZATION: Ann Street School

NAME: Christopher Cabrera GRADE: 8
HOME ADDRESS: 258 New York Avenue
CITY: Newark STATE: N.J. ZIP CODE: 07105
NAME OF SCHOOL OR ORGANIZATION: Ann Street School

NAME: Vania Bernardino GRADE: 8
HOME ADDRESS: 280 Adams Street
CITY: Newark STATE: N.J. ZIP CODE: 07105
NAME OF SCHOOL OR ORGANIZATION: Ann Street School

COACH'S INFORMATION

NAME: Manuel Oliveira
HOME ADDRESS: 427 Birch Bark Drive
CITY: Brick STATE: N.J. ZIP CODE: 08723
OCCUPATION/JOB TITLE: Science Teacher
COMPANY/ORGANIZATION/SCHOOL: Ann Street School
PHONE NUMBERS: (HOME) 732-477-7418 (BUSINESS) 973-465-4890
FAX NUMBER: E-MAIL: manny.haidy@worldnet.att.net

OMB, CLEARANCE #: 3145-0023

Privacy Act and Public Burden Statements: The information requested on this application form is solicited under the authority of the National Science Foundation Act of 1950, as amended. This information will be used with the management and evaluation of the competition and it will be disclosed to contractors managing the competition, judges and sponsors involved in and supporting the competition. Submission of this information is voluntary. However, failure to supply the information may reduce the possibility of your team receiving an award.

Public reporting burden for this collection of information is estimated to average 120 hours, including the time for reviewing instructions. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to: Herman G. Fleming, Reports Clearance Officer, Contracts, Policy and Oversight, National Science Foundation, Arlington, VA 22230.

SIGNATURES

We affirm that this entry for the Bayer/NSF Award for Community Innovation is original and has been independently conceived and developed by the student members of the team. We verify that all members are currently enrolled in sixth, seventh or eighth grade and that our coach is 18 years old or older. We further affirm that we have read and understand the rules of the competition. We understand that if our team is selected as a finalist, we will attend the Columbus Academy and The Discover Magazine Awards for Technological Innovation at Epcot in Walt Disney World (May 31 – June 6, 1999). Signatures verify that the information is valid and the lack of signatures by all team members and the coach will disqualify the entry.

Signature of the Team Coach: Manuel Oliveira Date: 1/26/99

Signatures of the Team Members:

1) Candice Valente 1/26/99 DATE

2) Ronald Cardoso 1/26/99 DATE

3) Christopher Cabrera 1-26-99 DATE

4) Vania Bernardino 1-26-99 DATE

OPTIONAL TEAM INFORMATION

We ask for the cooperation of the team coach in responding to the following questions. This information will be used to determine how and if the competition is meeting its goals, purposes and audiences. Submission of this information is voluntary. Failure to provide it will not affect your team's chances for an award.

Indicate your community type (check one): ☐ Rural ☐ Suburban ☑ Urban

Indicate the number of student team members who are:

____ Asian/Pacific Islander ____ Black, not of Hispanic origin 1 Hispanic/Latino

____ Native Am./Alaskan Native 3 White, not of Hispanic origin

Indicate the number of student team members who are: 2 Male 2 Female

MAIL COMPLETED ENTRIES TO:

Bayer/NSF Award for Community Innovation
105 Terry Drive, Suite 120, Newtown, PA 18940-3425

Note: Mail one original and three photocopies of the complete entry. Faxed entry material will not be accepted. Entries must be postmarked by **January 31, 1999,** or the entry will be ineligible for the competition. Materials that do not meet the rules and regulations will be disqualified. Permission is granted to duplicate this Official Entry Form.

Bayer/NSF Award for Community Innovation

Team Feedback Form

Entry #: 9-21 **Judge #:** 2

Entry Section	The Issue	Research	Testing	The Solution	Visual Presentation
Creativity	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☑ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☒ Very Good ☐ Good ☐ Fair ☐ Poor
Innovation	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☒ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☒ Very Good ☐ Good ☐ Fair ☐ Poor
Scientific Accuracy	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☒ Very Good ☐ Good ☐ Fair ☐ Poor
Feasibility	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☒ Very Good ☐ Good ☐ Fair ☐ Poor	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☒ Very Good ☐ Good ☐ Fair ☐ Poor	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor
Clarity of Communication	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☒ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor

Comments: I think this is a great idea which would make the school environment much pleasanter. My only suggestion for this otherwise extremely well-researched entry would be to clarify the position of the School Board regarding the necessary permission.

Bayer/NSF Award for Community Innovation

Team Feedback Form

Entry #: 9-21 **Judge #:** 26

Entry Section	The Issue	Research	Testing	The Solution	Visual Presentation
Creativity	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☒ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☒ Very Good ☐ Good ☐ Fair ☐ Poor
Innovation	☐ Excellent ☒ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☒ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☒ Very Good ☐ Good ☐ Fair ☐ Poor
Scientific Accuracy	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor
Feasibility	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☐ Very Good ☐ Good ☒ Fair ☐ Poor	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor
Clarity of Communication	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor	☐ Excellent ☐ Very Good ☒ Good ☐ Fair ☐ Poor

Comments: You did a good job with your research! You identified many good community resources. When you talk about the greenhouse you should have addressed the similarities and differences between greenhouses and biodomes. Unfortunately, due to the cost and upkeep associated with this project, it might be a hard sell.

Bayer/NSF Award for Community Innovation

Team Feedback Form

Entry #: 9-21 **Judge #:** 55

Entry Section	The Issue	Research	Testing	The Solution	Visual Presentation
Creativity	☐ Excellent ☑ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☑ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☑ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☑ Very Good ☐ Good ☐ Fair ☐ Poor	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor
Innovation	☐ Excellent ☑ Very Good ☐ Good ☐ Fair ☐ Poor	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☑ Very Good ☐ Good ☐ Fair ☐ Poor	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor
Scientific Accuracy	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor
Feasibility	☐ Excellent ☑ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☑ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☑ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☑ Very Good ☐ Good ☐ Fair ☐ Poor	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor
Clarity of Communication	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor	☐ Excellent ☑ Very Good ☐ Good ☐ Fair ☐ Poor	☑ Excellent ☐ Very Good ☐ Good ☐ Fair ☐ Poor

Comments: Seems like you've really done your research at what to plant, etc.

BAYER NSF AWARD

FOR COMMUNITY INNOVATION

March 22, 1999

Dear Team Members,

The sponsors of the Bayer/NSF Award for Community Innovation – the Bayer Corporation, the National Science Foundation, the Christopher Columbus Fellowship Foundation in cooperation with Discover Magazine – would like to congratulate you for your participation in this year's competition.

We're sorry that your team was not selected as a semifinalist team this year, but to show our appreciation for your participation will receive a Bayer/NSF Award for Community Innovation pin to wear as a symbol of the teams hard work. We have also returned a copy of the entry feedback forms from the judges who reviewed your entry. Feedback forms can be used to refine your entry submission for next year's competition (if you are still in the 7^{th} or 8^{th} grades).

We were thrilled with the entries we received for this year's competition. It is because of motivated students, like yourself, that this community competition has been so successful and exciting for us all. We hope you found participating in the competition a fun and rewarding experience.

Once again, we would like to thank you for being part of the competition. We hope you will continue to support the program and help us spread the word about the Bayer/NSF Award for Community Innovation.

Sincerely,

Bayer Corporation
National Science Foundation
Christopher Columbus Fellowship Foundation
Discover Magazine

BAYER NSF AWARD

FOR COMMUNITY INNOVATION

March 22, 1999

Dear Coach,

The sponsors of the Bayer/NSF award for Community Innovation – the Bayer Corporation, the National Science Foundation, the Christopher Columbus Fellowship Foundation in cooperation with Discover Magazine – would like to congratulate you on your participation in this year's competition. To show our appreciation, enclosed you will find a Bayer/NSF Award for Community Innovation pin.

Also enclosed, you will find copies of the Team Feedback forms, a team letter, and pins to distribute to your team members. Please explain to your team members that even though they were not selected as semifinalists this year, they can use these feedback forms to refine their entry for submission in next year's competition (if the team members are still in the 7th or 8th grade next year).

The number and quality of entries that we received this year were exceptional. By acting as a team coach, you have helped to make this community competition successful and exciting for us all. We hope you found participating in the competition a rewarding experience.

We are currently preparing for the 1999-2000-competition year and hope that you are planning to coach teams next year. Here is some information to help you plan:

- Start your team working early – this is a great activity for any summer program, youth organization or social club. If you know of any organization that may be interested in the competition, please give them our toll free number, **800-291-6020**, to call for materials.
- The toll free 800 number is open year-round to answer questions and forward competition materials. Or access our web site at **www.nsf.gov/bayer-nsf-award.htm** for competition information.
- The 1999-2000 guideline book will be available in the spring.
- Deadline for the 1999-2000 competition is **January 31, 2000**.

Once again, we would like to thank you for being part of the competition. We hope you will continue to support the program and help us spread the word about the Bayer/NSF Award for Community Innovation.

Sincerely,

Bayer Corporation
National Science Foundation
Christopher Columbus Fellowship Foundation
Discover Magazine

Name of Team: ***Air Quality Filters***
Coach's Name: Mary Lou Willis
School Name: Governor Thomas Johnson Middle School
City: Fredrick
State: MD
Zip: 21701

Name of Team: ***Bath Gals***
Coach's Name: J. Matthew Robeson
School Name: Neelsville Middle School
City: Germantown
State: MD
Zip: 20876

Name of Team: ***Behind the Corner***
Coach's Name: J. Matthew Robeson
School Name: Neelsville Middle School
City: Germantown
State: MD
Zip: 20876

Name of Team: ***Playgrounds***
Coach's Name: J. Matthew Robeson
School Name: Neelsville Middle School
City: Germantown
State: MD
Zip: 20876

Name of Team: ***Chesapeake Bay***
Coach's Name: J. Matthew Robeson
School Name: Neelsville Middle School
City: Germantown
State: MD
Zip: 20876

Name of Team: ***The Fire Watchers***
Coach's Name: Kristen Till
School Name: Neelsville Middle School
City: Germantown
State: MD
Zip: 20876

Name of Team: ***Da Life Savers***
Coach's Name: John Kenworthy
School Name: Neelsville Middle School
City: Germantown
State: MD
Zip: 20876

Name of Team: ***B.I.O.M.E. - Biosphere in our Metropolitan Environment***
Coach's Name: Manuel Oliveira
School Name: Ann Street School
City: Newark
State: NJ
Zip: 07105

Name of Team: ***Strike up the Band***
Coach's Name: Mrs. Rozenweig
School Name: Fisher Middle School
City: Ewing
State: NJ
Zip: 08618

Name of Team: ***The Smoke Detectors***
Coach's Name: Paula Rozenweig
School Name: Fisher Middle School
City: Ewing
State: NJ
Zip: 08618

Name of Team: ***Franklin Adolescence Crime Eaters***
Coach's Name: Eileen Miller and Barbara Suazzo
School Name: Franklin Township School --Hunterdon
City: Quakertown
State: NJ
Zip: 08868

Name of Team: ***Warriors***
Coach's Name: Joe Zahorsky
School Name: Life Center Academy
City: Florence
State: NJ
Zip: 08016

Name of Team: ***Lots of Help for Little People***
Coach's Name: Betty Monroe
School Name: Penns Grove Middle School
City: Penns Grove
State: NJ
Zip: 08069

Name of Team: ***Operation CAC (Come & Chill)***
Coach's Name: Betty Monroe
School Name: Penns Grove Middle School
City: Penns Grove
State: NJ
Zip: 08069

Name of Team: ***Community Helpers***
Coach's Name: Betty Monroe
School Name: Penns Grove Middle School
City: Penns Grove
State: NJ
Zip: 08069

Name of Team: ***Community Helpers***
Coach's Name: Carla Mazzarella
School Name: St. Phillip School
City: Clifton
State: NJ
Zip: 07013

Name of Team: ***Stoplight Fixer-Uppers***
Coach's Name: Carla Mazzarella
School Name: St. Phillip School
City: Clifton
State: NJ
Zip: 07013

Name of Team: ***Clappers for the Blind***
Coach's Name: Carla Mazzarella
School Name: St. Phillip School
City: Clifton
State: NJ
Zip: 07013

Name of Team: ***Super Senior Citizen Savers***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***911 Lifesavers***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***The Four Hangout Heroes***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***How "Well" is Our Water?***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***The Runner-Uppers***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***Operation Lake Cleaners***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***The Park Cleaner Uppers***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***The Nature Center***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***The Community Care Bears***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***BMT Bridge Builders***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***Helping Teens and their Families***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***HDP - Helping Disabled Persons***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***TREG - Teen Recreation/Entertainment Group***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***Teen Helpers***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***H.E.A.R.T. -- Helpful Environmental Assunpink Restoration Team***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***The Hangout Heroes***
Coach's Name: Ron Schott
School Name: Upper Freehold Regional Middle School
City: Allentown
State: NJ
Zip: 08501

Name of Team: ***Smoke Stoppers***
Coach's Name: Theresa McElroy
School Name: Ventor Educational Community Complex
City:Ventor
State: NJ
Zip: 08406

Name of Team: ***Canada Goose Polluting our Outdoor Parks***
Coach's Name: Joan S. Hurd
School Name: A.M. Kulp Elementary School
City: Hatfield
State: PA
Zip: 19440

Name of Team: ***P.A.T.A.M.***
Coach's Name: Joan S. Hurd
School Name: A.M. Kulp Elementary School
City: Hatfield
State: PA
Zip: 19440

Name of Team: ***C.O.W. - Community Outreach Warehouse***
Coach's Name: Gerald Davidheiser
School Name: Boyertown Jr. High School
City: Boyertown
State: PA
Zip: 19512

Name of Team: ***Roy G. Biv***
Coach's Name: John Aloi
School Name: David E. Williams Middle School
City:Coraopolls
State: PA
Zip: 15108

Name of Team: ***Boxeteers***
Coach's Name: Caren Falascino
School Name: Fort Couch Middle School
City: Pittsburgh
State: PA
Zip: 15241

Name of Team: ***Tire Reusers***
Coach's Name: Caren Falascino
School Name: Fort Couch Middle School
City: Pittsburgh
State: PA
Zip: 15241

Name of Team: ***AMKA Incorporated***
Coach's Name: Caren Falascino
School Name: Fort Couch Middle School
City: Pittsburgh
State: PA
Zip: 15241

Name of Team: ***Students against Drugs***
Coach's Name: Caren Falascino
School Name: Fort Couch Middle School
City: Pittsburgh
State: PA
Zip: 15241

Name of Team: ***Watch-Pups***
Coach's Name: Caren Falascino
School Name: Fort Couch Middle School
City: Pittsburgh
State: PA
Zip: 15241

Name of Team: ***Roadsiders***
Coach's Name: Caren Falascino
School Name: Fort Couch Middle School
City: Pittsburgh
State: PA
Zip: 15241

Name of Team: ***The People Who Care***
Coach's Name: Caren Falascino
School Name: Fort Couch Middle School
City: Pittsburgh
State: PA
Zip: 15241

Name of Team: ***Gold Diggers***
Coach's Name: Caren Falascino
School Name: Fort Couch Middle School
City: Pittsburgh
State: PA
Zip: 15241

Name of Team: ***The FDR "Flood Kids"***
Coach's Name: Kathleen Horwatt
School Name: Franklin Delano Roosevelt Middle School
City: Bristol
State: PA
Zip: 19007

Name of Team: ***One Breath to Live***
Coach's Name: Joan S. Hurd
School Name: Gwyn-Nor Elementary School
City: North Wales
State: PA
Zip: 19454

Name of Team: ***Reading Is Fundamental. Libraries Are Too!***
Coach's Name: Joan S. Hurd
School Name: Gwyn-Nor Elementary School
City: North Wales
State: PA
Zip: 19454

Name of Team: ***Save the World and Your Wallet!***
Coach's Name: Joan S. Hurd
School Name: Gwyn-Nor Elementary School
City: North Wales
State: PA
Zip: 19454

Name of Team: ***Time's Runnin Out...Childproof Your Home***
Coach's Name: Joan S. Hurd
School Name: Gwyn-Nor Elementary School
City: North Wales
State: PA
Zip: 19454

Name of Team: ***Fish Farmers***
Coach's Name: Michelle Calvert
School Name: Hermitage Middle School
City: Hermitage
State: PA
Zip: 16148

Name of Team: ***Fish Hatchery***
Coach's Name: Michelle Calvert
School Name: Hermitage Middle School
City: Hermitage
State: PA
Zip: 16148

Name of Team: ***Cybersenior***
Coach's Name: Michelle Calvert
School Name: Hermitage Middle School
City: Hermitage
State: PA
Zip: 16148

Name of Team: ***The Restorers***
Coach's Name: Michelle Calvert
School Name: Hermitage Middle School
City: Hermitage
State: PA
Zip: 16148

Name of Team: ***Stop Signs R Us***
Coach's Name: Michelle Calvert
School Name: Hermitage Middle School
City: Hermitage
State: PA
Zip: 16148

Name of Team: ***The Peach Pit***
Coach's Name: Michelle Calvert
School Name: Hermitage ~ Quest
City: Hermitage
State: PA
Zip: 16148

Name of Team: ***Recreation Realm***
Coach's Name: Michelle Calvert
School Name: Hermitage ~ Quest
City: Hermitage
State: PA
Zip: 16148

Name of Team: ***Earthkeepers***
Coach's Name: Michelle Calvert
School Name: Hermitage ~ Quest
City: Hermitage
State: PA
Zip: 16148

Name of Team: ***The Village People***
Coach's Name: Michelle Calvert
School Name: Hermitage ~ Quest
City: Hermitage
State: PA
Zip: 16148

Name of Team: ***TheTobacco Bill Committee***
Coach's Name: Michelle Calvert
School Name: Hermitage ~ Quest
City: Hermitage
State: PA
Zip: 16148

Name of Team: ***The Tornadoes***
Coach's Name: Maribeth Valentine
School Name: Quaker Valley Middle School
City: Sewickley
State: PA
Zip: 16063

Name of Team: ***The Abecs***
Coach's Name: Kaye L. Schwenk
School Name: Schuykill Haven Area Middle School
City: Schuykill Haven
State: PA
Zip: 17972

Name of Team: ***School Kids***
Coach's Name:Frances Pilarski
School Name: St. Ignatius Loyola School
City: Reading
State: PA
Zip: 19609

Name of Team: ***J.E.T.T.S. - Junior Environmental Tree Tenders***
Coach's Name: Daisy N. Century
School Name: Sulzberger Middle School
City: Philadelphia
State: PA
Zip: 19139

Region 1 → 24

Region 2 → 25

Region 3 → 19

Region 4 → 38

Region 5 → 31

Region 6 → 32

Region 7 → 17

Region 8 → 9

Region 9 → 66

Region 10 → 42

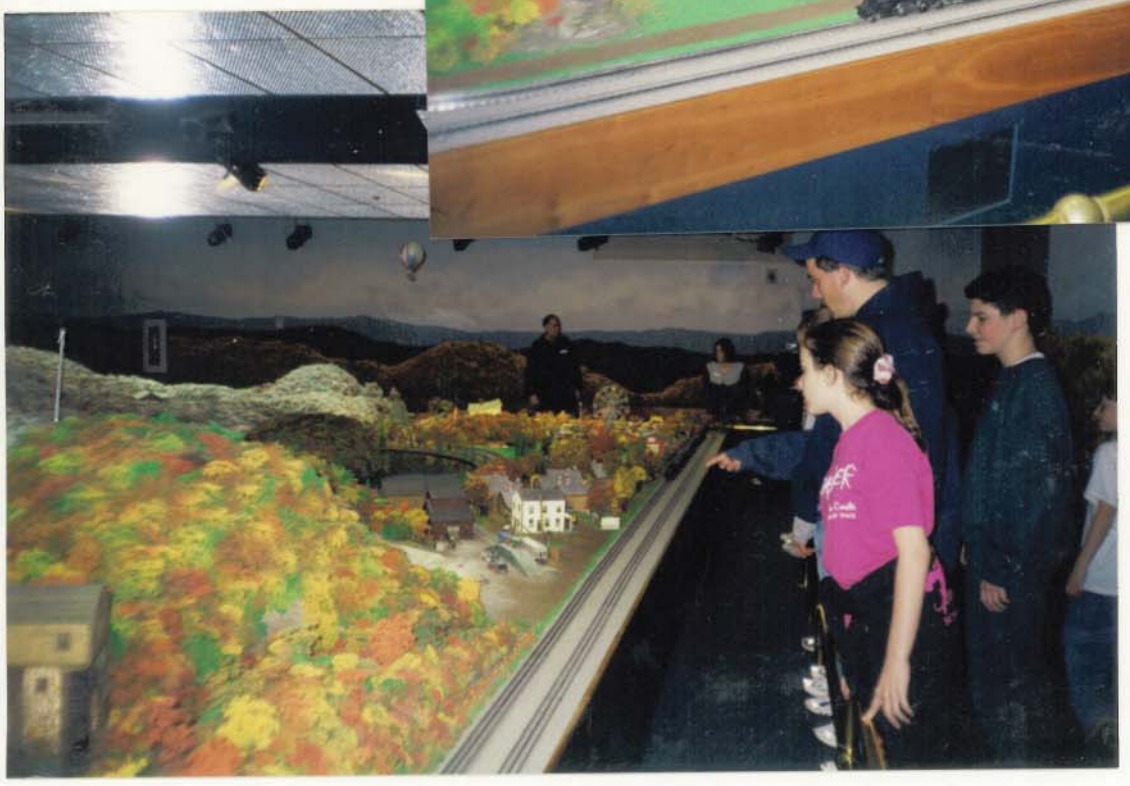

ALVA
RESTAURANT


T.R.A.C.K.S.
TRACKING RAILROAD ACTIVITY - CROSSING KIDS SAFELY


BULLS

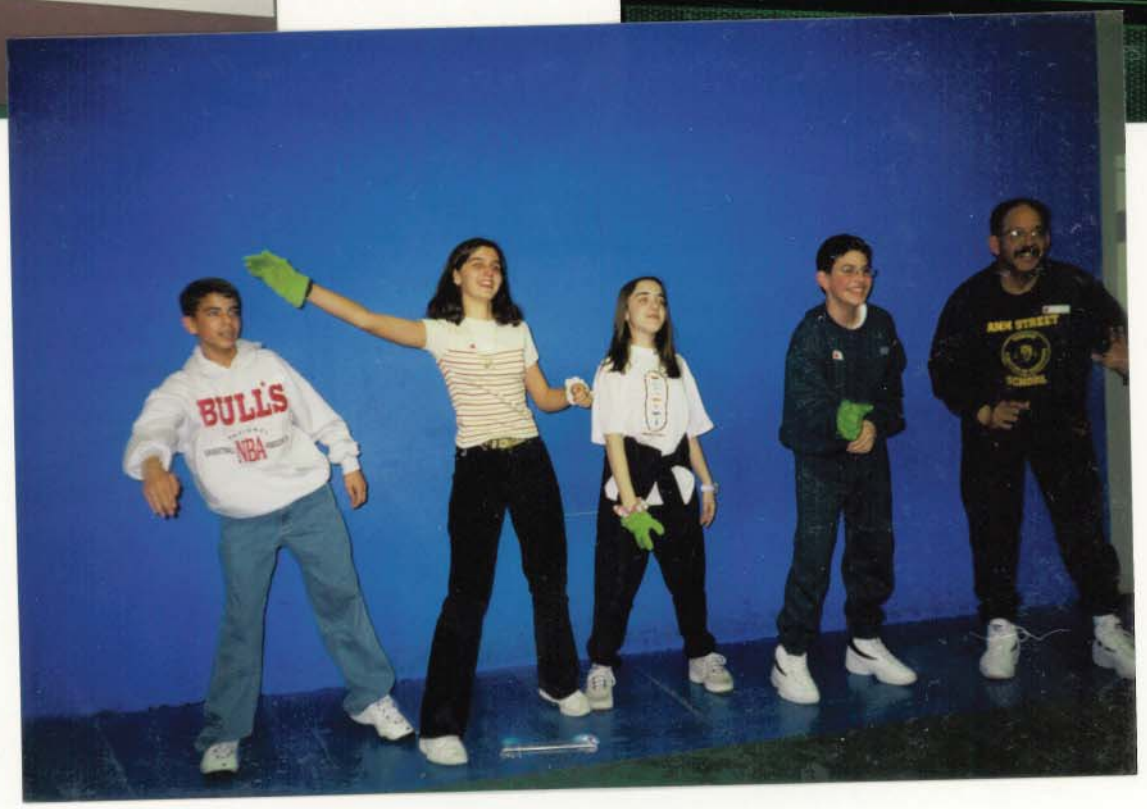

DIPPER
The Little Dipper


Lucky
REALTY
973-617-7700




BULLS
NBA


VR KLEPTER
200
33
3


BULLS
NBA


DIES AND PLOENTS


HIGH SCHOOL