U.S. DEPARTMENT OF EDUCATION

GreenRibbonSchools

School Nominee Presentation Form

ELIGIBILITY CERTIFICATIONS

School and District's Certifications

The signatures of the school principal and district superintendent (or equivalents) on the next page certify that each of the statements below concerning the school's eligibility and compliance with the following requirements is true and correct to the best of their knowledge. *In no case is a private school required to make any certification with regard to the public school district in which it is located.*

1. The school has some configuration that includes grades Pre-K-12.
2. The school has been evaluated and selected from among schools within the Nominating Authority's jurisdiction, based on high achievement in the three ED-GRS Pillars: 1) reduced environmental impact and costs; 2) improved health and wellness; and 3) effective environmental education.
3. Neither the nominated public school nor its public school district is refusing the U.S. Department of Education Office of Civil Rights (OCR) access to information necessary to investigate a civil rights complaint or to conduct a district wide compliance review. The Department of Defense Education Activity(DoDEA) is not subject to the jurisdiction of OCR. The nominated DoDEA schools, however, are subject to and in compliance with statutory and regulatory requirements to comply with Federal civil rights laws.
4. OCR has not issued a violation letter of findings to the public school district concluding that the nominated public school or the public school district as a whole has violated one or more of the civil rights statutes. A violation letter of findings will not be considered outstanding if OCR has accepted a corrective action plan to remedy the violation.
5. The U.S. Department of Justice does not have a pending suit alleging that the public school or the public school district as a whole has violated one or more of the civil rights statutes or the Constitution's equal protection clause.
6. There are no findings of violations of the Individuals with Disabilities Education Act in a U.S. Department of Education monitoring report that apply to the public school or public school district in question; or if there are such findings, the state or public school district has corrected, or agreed to correct, the findings.
7. The school meets all applicable federal, state, local and tribal health, environmental and safety requirements in law, regulations and policy and is willing to undergo EPA on-site verification.

U.S. Department of Education Green Ribbon Schools 2015-2018

☐ Public ☐ Charter ☐ Title I ☐ Magnet ☒ Private ☐ Independent ☐ Rural

Name of Principal: Mrs. Moira Clark, President

Official School Name: Magnificat High School

Official School Name Mailing Address: 20770 Hilliard Blvd. Rocky River, Ohio 44116

County: Cuyahoga State School Code Number: 361322

Telephone: 440-331-1572 Fax: 440-895-2045

Web site/URL: www.magnificaths.org E-mail: mclark@maghs.org

**Private Schools: If the information requested is not applicable, write N/A in the space*

I have reviewed the information in this application and certify that to the best of my knowledge all information is accurate.

Moira Clark _____ Date: 2/27/2018

(President's Signature)

U.S. DEPARTMENT OF EDUCATION

GreenRibbonSchools

Name of Superintendent: N/A

District Name: N/A

I have reviewed the information in this application and certify that to the best of my knowledge all information is accurate.

_____ Date:

(Superintendent's Signature)

Nominating Authority's Certifications

The signature by the Nominating Authority on this page certifies that each of the statements below concerning the school's eligibility and compliance with the following requirements is true and correct to the best of the Authority's knowledge.

1. The school has some configuration that includes grades Pre-K-12.
2. The school is one of those overseen by the Nominating Authority which is highest achieving in the three ED-GRS Pillars: 1) reduced environmental impact and costs; 2) improved health and wellness; and 3) effective environmental and sustainability education.
3. The school meets all applicable federal civil rights and federal, state, local and tribal health, environmental and safety requirements in law, regulations and policy and is willing to undergo EPA on-site verification.

Name of Nominating Agency:

Name of Nominating Authority:

(Specify: Ms., Miss, Mrs., Dr., Mr., Other)

I have reviewed the information in this application and certify to the best of my knowledge that the school meets the provisions above.

Charlotte Jones-Ward

_____Date:

(Nominating Authority's Signature)

SUMMARY AND DOCUMENTATION OF MAGNIFICATS ACHIEVEMENTS

Pillar One Net Zero Environmental impact

Zero greenhouse gas (GHG) emissions

Magnificat has participated in the Demand Response Program through our Electric Energy provider since 2013, earning annual rebates. Our school renovations focus on sustainability; our most recent renovation included the installation of occupy sensors, light tunnels, eco-friendly furniture, paneling, and flooring. In 2014 our Hoop House was installed with ridge wall vent shutters using solar operators. All halogen bulbs have been replaced with LED bulbs where feasible.

Improved water quality, efficiency & conservation

Annual soil samples are taken to determine application of fertilizers on turf based on need; reducing applications from six to four annually. Facilities remediated fixtures to eliminate lead in water tested in 2015. All new campus plantings are native species. Students installed a rain garden planted with natives, diverting 2,500 sq. ft. roof section of storm water from the city sewer system. We partnered with Holden Arboretum towards certification as a Tree School. Students have inventoried and evaluated our campus trees and are actively developing plans to re-forest our campus. Students will be attending a Tree Summit at Holden in the spring to showcase their work. Rain barrels are used to supplement irrigation of our vegetable garden.

Reduced waste production

In 2008 our recycling program was formalized. We are a single-stream recycling school with a separate contract for composting. Recycling/composting centers are strategically located in the school. All classrooms and office spaces have a single stream recycling bin and a waste receptacle. Our own character "Mother Earth", the Environmental Science Teacher, was introduced to the school community in 2008 and makes a reminder appearance at school gatherings. Our cafeteria uses compostable service plates and utensils. We began our conversion to a paperless environment in 2011. Faculty and Staff are encouraged to use Google docs and students are provided devices if they are not able to afford them. Over a quarter million plastic water bottles have been eliminated from the landfill by encouraging the use of a

reusable water bottle at one of our two water refilling stations.

Alternative transportation to, during, and from school

We are a no idling campus with signage posted at student pick-up locations. We encourage community members to walk or ride a bike. Students walk to all local field trips.

Pillar Two Net positive impact on students' and staff members' health

Integrated school environmental health program

Our online work-order system, available to all faculty and staff, ensures for quick notification/remediation of problems before they become a health concern. Exhaust systems and ventilation equipment are inspected three times per year. Filters are routinely changed twice per year. We created a Safety Committee in 2016, with members from our Leadership Team, Department Heads, and Facilities Department. Meeting bi-monthly, the group reviews all safety issues including hazardous materials, equipment safety, chemical storage, and Integrated Pest Management. In 2015 all mercury compounds were eliminated from classrooms and storerooms. Smoking is prohibited on campus and signage is posted at school entrances. All classrooms and offices are visually inspected weekly by Facilities staff.

High standards of nutrition, fitness, and quantity of outdoor time

Students began gardening offsite in 2013 and secured funding to construct an onsite Gothic Arch Hoop House in 2014 to grow vegetables. Students' gardening efforts have resulted in the donation of over 670 pounds of organically grown vegetables to our local Meals on Wheels program. The Hoop area was expanded in 2015 to include a 3-season pavilion to be used as outdoor classroom space. The Hoop area is a Certified Wildlife Habitat through the National Wildlife Federation and also certified and registered as on official Monarch Waystation through Monarch Watch, University of Kansas. Our Main building has a beautifully landscaped courtyard and pond and in 2016 a Grotto with a pond and seating was constructed in an underutilized turf area expanding outdoor classroom space. The cafeteria remodel included an expansion of our outdoor patio with additional seating.

Our Health and Physical Education program strives to promote holistic health through a wellness approach, which stresses the need for balance in one's life. Our annual Big Lil Sis Challenge is an all school, day long competition pitting Senior/Sophomore teams against Junior/Freshman teams in outdoor field games. Over 65% of our students participate in at least one team sport. Our Fitness Center was renovated and new equipment purchased in the summer of 2015 and is available to all students, faculty, and staff.

Outdoor learning Spaces on Campus: Hoop House & Shade Pavilion, Grotto, Courtyard, Marian Commons Patio, Grounds 19 acre campus, including: a swamp, 2 ponds, a rain garden, and an Ohio Native Prairie.

Pillar III 100 % of graduates are environmentally and sustainability literate

Interdisciplinary learning about key relationships between dynamic environmental, energy and human systems

Environmental and sustainability concepts are integrated throughout our curriculum. Our curriculum is aligned to the state 2010 science standards. Class of 2019-99% passed Science on Iowas with 3 or higher, Class of 2020-90% passed Science on Iowas with 3 or higher. Care for God's Creation, one of the Catholic Social Teachings, is included in our faculty/staff annual Mission Day programming.

Use of environment and sustainability to develop STEM content, knowledge, and thinking skills

Our environmental education curriculum pays particular attention to scientific practices, such as asking questions, developing and using models, planning and carrying out investigations, analyzing and interpreting data, using mathematics and computational thinking, constructing explanations and engaging in argument, and applications based on evidence.

Development and application of civic engagement knowledge and skills

In 2012 we obtained the Fair Trade School designation by Fair Trade USA. Coffee consumed on campus is all Fair Trade. Fair Trade uniforms are available for purchase and we hold an annual 2-day Fair Trade Christmas Sale inviting local Fair Trade organizations on campus. Local environmental groups and schools attended a presentation at Magnificat in February, 2017, by Dan Misleh, Director of the Catholic Climate Covenant in Washington D.C. Magnificat's Sustainability and Seeds of Service Club (SOS) students were invited to showcase Magnificat's efforts towards sustainability. SOS received a Certificate of Special Recognition from the City of Rocky River for "outstanding

volunteer efforts" in the cities Community Garden, October, 2013. SOS students presented the Hoop House project to members of the Lakewood/Rocky River Rotary Club at their luncheon, 2015. SOS student's skyped with 7th grade students at Lee Burnenson Middle School to share their Hoop House video and answer questions about growing vegetables using organic methods. SOS students conducted tours of the gardens to students visiting from St. Rocco Grade School.

Sophomore Students participate in 30 hours of volunteer local community service. Earth Day is celebrated annually on campus. Marine Science Club students engage in experiential learning on the Floating Lab at Hinckley Lake in Hinckley, Ohio. Students participate in a two-day biodiversity investigation identifying an area on campus with the most biodiversity and quantifying their findings; investigate invasive species, cause of spreading, and problem-solve ways to stop the spread. Students visit a recycling center/landfill, investigate solid waste in their lunch, and use critical thinking to decrease their waste. Waste is placed in a "classroom landfill" and "classroom compost" and students observe the natural process. Students investigate the addition of Nitrogen, Phosphorus, or a combination of both in campus pond water by adding samples and growing algae for three weeks. Students visit a waste-water treatment plant and observe how waste is removed. Students investigate how to cook s'mores using solar ovens. Students place slides all over campus to collect data to investigate air pollution. Student-created biodiversity question posters blitz our campus.

Students model sustainable behavior in cafeteria sorting, recycling, and composting their lunches. Rationale is given to students for turning lights out when the sun is out in classrooms. Our Facilities Director gives tours to students to learn about our school mechanical systems and showcase the sustainability efforts taken by our Facilities Department. Twenty percent of our students are enrolled in an AP Science or Math course for the 2017-2018 school year. Our "basic" level science courses are taught at a college prep level. We offer students honors or AP options for Biology, Chemistry, and Physics. We offer AP classes for Statistics and Calculus. We partner with The Ohio State University in their STEM Ambassadors program. The STEM Ambassadors, all 3rd or 4th year engineering students, shared their experiences in the fields of Electrical and Computer Engineering, Chemical and BioMedical Engineering, Industrial and Systems Engineering, Mechanical Engineering, Civil Engineering, and Chemical Engineering. Six Magnificat Alumnae came to speak to current math and science students about careers in engineering.

Retreats for students are offered at every grade level. The Freshman class journeys together by spending the day on our Founders' Farm located on 726 acres in Villa Maria, Pennsylvania. The Sophomore Class walks to their retreat location bringing only reusable water bottles. They are served a simple meal of bread and soup and reflect on the themes of simplicity, service, and compassion. Juniors and Seniors are offered a variety of retreats located at nature settings such as: the Lake Erie Beach, the Jesuit Retreat House, Hocking Hills, the Wellness Center at Rivers Edge, and the Villa Maria farm.

Green Ribbon School Application

Part One:

School: MAGNIFICAT HIGH SCHOOL

District: Rocky River District Number: 1826

Address: 20770 Hilliard Blvd.

City Rocky River Zip 44116 County Cuyahoga

Contact person(s): Mary Jo Rawlins

Email: mjrawlins@maghs.org Phone: 440-331-1572 x260

School Type (Include all that apply): High School 9-12
(Elementary (K-5 or 6), Middle or Jr. High, High School)

How would you describe your school?: Suburban
(Urban, Suburban, Rural)

School Type: Private All Girl Catholic
(Public, Private/Independent, Charter or Other-please describe)

Does your school serve 40% or more students from disadvantaged households? Y/N no, 60% of our student body receive tuition assistance.

School Demographics –
Approximately what percentage of your school's students qualify for:
Free Lunch: 4% Reduced Lunch 6%

Approximately what percentage of students in your school are limited English proficient? 0 %

Graduation rate (if appropriate): 100%

Attendance rate: 96.01%

What is your total enrollment?: 706

Part Two: Summary narrative

Our Mission Statement:
We educate young women holistically to learn, lead and serve in the spirit of Mary's *Magnificat*.

Ever since Magnificat High School (MHS) opened in 1955 with a freshman class of 63 students and three Sisters of the Humility of Mary we are integrally linked to our founders and mirror in many ways the Humility of Mary Community (HMs) charism of humility (humus) connecting MHS with "the whole earth community" and the justice theme of Care for God's Creation. Our 19 acre campus is thoughtfully developed to maximize this mirror of the HMs beliefs and is reflected in all we do.

In 2008, our school wide student initiated recycling program was the origin of our comprehensive sustainability approach that has given rise to: **composting, single stream recycling, planting of an Ohio Prairie, our Fair Trade School designation, Certification as a Wildlife Habitat through the National Wildlife Federation, installation of a Rain Garden, Trees Matter Project and recognition as a Certified Monarch Butterfly Waystation**. Sustainability and Environmental themes permeate our school culture, our curriculum, and are our guide with all purchasing decisions and operations. Our mission focus to provide a holistic education connects our students and staff with their environment.

In 2009 a Level I Energy Audit was conducted followed by Facilities Staff conducting a Level II Audit.

Awards, Certifications

2011	Green Lantern Award from Crain's Cleveland Business for Sustainable efforts awarded to Faculty member Heidi Paul.
2012	Fair Trade School designation by Fair Trade USA. This made us one of four high schools in the nation that have this seal.
2013	$75.00 grant awarded to Seeds of Service Club (SOS) from Master Gardeners Volunteers Program to purchase vegetables and supplies.
10/23/2013	Master Gardener Volunteer Certification awarded to Mary Jo Rawlins through Ohio State University Extension.
2013	Master recycling certificate from the Cuyahoga County Solid Waste District, awarded to Heidi Paul.
10/2013	Certificate of Special Recognition from the City of Rocky River awarded to the SOS for their outstanding volunteer effort in the Rocky River Community Gardens.
4/07/2014	Cleveland Cavaliers Green Week Award.
6/08/2015	Campus Hoop House area and Ohio Prairie are Certified Wildlife Habitat through the National Wildlife Federation.
6/2016	Tree Steward Certification awarded to staff member Mary Jo Rawlins
10/2017	School certified as a Monarch Waystation through Monarch Watch, University of Kansas.

Every September, to begin their holistic education as a class, freshmen, new faculty and staff travel to Villa Maria, Pennsylvania to spend the day at the motherhouse and farm of the HMs, founders and sponsors of MHS. The Villa, operating on 726 acres in Villa Maria, PA is an integral part of the heritage of the HMs. The farm serves as a symbol of the struggle and sacrifice of a small group of women who in 1864 established a viable, productive farm when others before them had failed. Land management at the farm is based on spirituality, sustainability, simplicity and the preservation of all local life systems.

This "Heritage Day" provides all with an opportunity to learn the history and identity of the school and the beliefs held by the HMs.

Students are required to participate in a retreat during their Junior and Senior Year. Our offerings are designed to step back and reflect using nature to re-unite students and staff with our environment. Retreats are held in Hocking Hills, at a Lake Erie beach, the Jesuit Retreat House, Rivers Edge, and Villa Maria, PA.).

We have developed many partnerships to continue our communities' education and further our student involvement to sustain our work.

- Diocese of Cleveland Care for Creation Team, under the umbrella of the Social Action Office, Faculty Member participating.
- 2012 began purchasing only Fair Trade coffee for campus.
- 2015 partnership with One Seed Heritage for the purchase of Fair Trade Uniforms for students.
- 2012 began our annual Fair Trade Christmas Sale on Campus.
- Westside Care for Creation Team, Faculty member participating.
- 2016 partnered with Holden Forests & Gardens with our Trees Matter Project.
- Guest speakers include: Cuyahoga County Soil and Water Conservation District (Water Matters), Holden Forests & Gardens (Tree Stewardship), Western Reserve Land Conservatory (Tree Stewardship) and Cuyahoga County Master Gardeners Volunteers speakers on Monarch butterflies, and Herbs.
- Green Team: Students volunteer at large school events to assist and instruct guests in our compost and recycling programs.
- Internship programs with NASA, the Cleveland Clinic, United Nations, and Great Lakes Science Center.

Student produced YouTube videos:
Magnificat High School Sustainability Video
4/7/14, link: https://youtu.be/pxEM2jLOFcI

Magnificat Hoop House Tour 2
3/15/2016, link: https://www.youtube.com/watch?v=Jw6l37H6IEk

Part Three: PILLAR ONE: Net zero environmental impact

In 2009 a Level I Energy Audit was conducted by Berry Insulation Co., a Certified Energy Auditor. This was followed by a Level II Audit conducted in house. As a result we began implementing an energy reduction strategy. One goal is to achieve the US Department of Energy's ENERGY STAR designation as part of our green strategy.

In April, 2011 the school began a process of re-designing the hub of our school for 21st century learning. Fielding Nair International (FNI) was hired to help facilitate the process. Surround Learning™, coined by

Sr. Helen Jean Novy, is a concept that connects the physical environment, new learning methodologies, and information and communication technologies for creating a holistic and enriched learning experience. FNI conducted a series of Discovery Workshops involving students, faculty, staff, parents and community members. Sustainability was one of the primary focus workshops. To achieve LEED certification prerequisites must be applied to the entire building. The Surround Learning Center area only makes up approximately 20-22% of our entire building area. Due to the additional costs that would be required to obtain LEED certification (using the EBOM system), it was recommended that priority be placed on implementing elements that impact sustainability the most and that have educational value. The LEED project checklist was created and is followed today when purchasing materials and resources, and replacing old mechanical systems, light fixtures and plumbing.

The renovated Marian commons has occupy sensors and the installation of Light Tunnels as a way of getting natural light into the building. Light Tunnels are essentially highly reflective tubes that bounce light into the building.

Since 2013 Magnificat has been enrolled in the Demand Response Program. Demand Response is a load curtailment program and provides an alternative to utilities powering up dirty ancillary power plants to provide peak power, mostly used in the summer during cooling season. Additional assets are required by our grid operator, PJM to ensure there are no black-outs or interruption of power for our region. Ancillary power plants give off the highest emissions and by participating in Demand Response Magnificat is helping the grid stay stable without the additional carbon footprint. Each year that we have participated we have improved our performance.

In 2014 a 20ft. x 24ft. Gothic Arch Hoop House was constructed. Two end wall ridge vents with 24" x 24" aluminum shutters with solar operators were installed.

Part Four: Element 1B: Improved water quality, efficiency and conservation

In the Fall of 2015, we split turf fertilization and weed control out of our general landscaping contract. The new provider is required to do an annual soil test (core samples), send the lab testing results to us and discuss those results prior to any turf fertilization or weed control application. This has resulted in only applying what the turf needs. We have gone from six applications to four applications a year and visual results are wonderful. This new process has resulted in less chemical run off into the waterways and less chemical exposure to the student body.

The building was tested for lead in water, 2015, and areas identified were remediated.

Rain barrels are used for the Hoop House area irrigation.

Our outdoor landscape beds are not irrigated and are planted with a variety of native and non-native species. As these plants die off they are replaced with suitable natives that can tolerate drought conditions. Our interior courtyard is irrigated and the system was corrected and repaired two years ago. This system is checked weekly for leaks during the growing season.

Trees Matter

MHS is working towards certification as a Holden Arboretum Tree School. Our Tree School Advisory Committee, made up of teachers, staff and students formed after a visit on 11/30/16 from the Community Forester at Holden Arboretum and an Urban Forester with the Western Reserve Land Conservatory. After meeting with our SOS and Sustainability clubs we toured the campus. Emerald Ash Borer damage, drought, fire blight and landscaper damage will result in the loss of many of our mature trees in the near future. Students are surveying the campus by measuring, identifying and rating the condition of each tree. The inventory (completion spring, 2018) will be mapped using the i-Tree program. We will design a plan, budget, triage measures, maintenance schedule and identify funding sources to re-forest our campus. This spring we will be holding a morning tree workshop and afternoon triage and planting blitz inviting all students, staff, parent clubs and alum that want to learn about tree stewardship.

Rain Garden

In the fall of 2016 a student spearheaded the installation of a 20ft. x 12ft. rain garden on campus. She designed the plan, obtained grant funding and, with help of other students, faculty, staff and friends, installed a native garden that is filtering rain water diverted from a 2500 sq. ft. roof section of our Main Gym.

Earth Day Activities

Earth day is celebrated annually on campus. Activities conducted in prior years involved a seed packet give-away to the student body.

Part Five: Element 1C: Reduced waste production

Waste

Although we had been recycling for a number of years student participation was low. In 2008 our recycling program was formalized. This process began in response to a group of thirty students who had traveled the previous summer on an immersion trip to El Salvador, Cleveland (inner city), or Kentucky. They were challenged to do something in response to the conditions they had witnessed during their trips. Recycling was introduced at a school rally where a student produced video was viewed (trash collected for a day was separated and displayed on tables) and our own character “Mother Earth”, the Environmental Science Teacher in costume was introduced to the student body.

As an important step toward meeting our goal of building a Zero Waste school community, we have become a single-stream recycling school with a separate contract for composting. Lunches, kitchen scraps, coffee filter are all composted. Our cafeteria uses compostable service plates and utensils.

Instead of diligently separating recyclables into two “streams”; mixed paper (newspaper, junk mail, etc.) and commingled containers (bottles, cans, etc.), we are able to put these two streams together. Every classroom and office has two bins. We have six Composting stations strategically located in the school.

The trash container signage was recently changed from “trash” to “landfill” to clarify this process and encourage student participation.

Our Art Department (metals class) and Facilities Department take scrap metals to a scrap yard for recycling.

In 2011 we began a conversion to a paperless environment. Faculty were given IPads and students are assigned a school email address to facilitate paperless communication. Faculty is encouraged in the use of Google docs and Professional development is ongoing to develop these skills and help in the reduction of paper usage. All students are required to have a device for class and are provided devices if they are not able to afford them.

Plastic Water Bottle Reduction
We have two water bottle refilling stations. Sustainability students designed and sold a refillable water bottle with the proceeds used to purchase a refilling station. Counting, as of today, we have diverted close to a quarter million plastic water bottles from the landfill.

Hazardous waste
Navigate Prepared Flipcharts is an App we have been using for three years. It is available to all employees and reviewed during our welcome back staff meetings. In the event of a hazard spill employees can quickly access our safety procedures from their devices rather than locating a paper binder of our emergency management plan. Blood borne pathogens and proper disposal procedures are also reviewed and presented to staff by the school nurse at our welcome back meetings. All hazardous waste is properly disposed of under the direction of our Facilities Director.

Part Six: Element 1D: Use of alternative transportation to, during and from school

Magnificat High School recruits students from a five county area who commute by bus or private car. There is a no-idling policy on campus with signs posted.

We have five bike racks installed around the building and encourage students and staff to use them. We do not have a transportation fleet, but have four vans to be used for field trips, retreats and sports teams. Students walk to local field trips, including Biology class to Earth Fare, Seeds of Service club to the Meals on Wheels Program, and the entire Sophomore Class to their Day Retreat held at the Rocky River Community Center.

Our designated vehicle loading and unloading areas are more than 25 feet away from our buildings air intake doors and windows. No Idling signs are posted at loading areas.

Our four school vans are on a routine maintenance schedule to ensure they are operating at peak performance.

As part of our summer Immersion trip in Cleveland students are required to use public transportation to arrive at the retreat destination on the City's east side.

Part Seven: PILLAR TWO: Net positive impact on student and staff health

We are committed to a sustainable healthy school environment. Our Facilities Department takes a proactive approach to building maintenance. Over the last three years our antiquated HVAC systems have been repaired and brought up to their optimal operation. Classrooms are inspected weekly by Facility Staff to ensure systems are operating correctly and structures are sound. A readily available on line work order system, available to all Faculty and Staff is in place to notify Facilities when a problem occurs so it can be quickly rectified.

All exhaust equipment meets local code. Exhaust systems are installed and operational at all major airborne contaminant sources. Newer higher efficiency systems have been installed where repairs could not be made due to lack of parts. Exhaust systems are checked three times a year and filters are replaced two times per year.

Our school ventilation equipment operates according to the standards required at time of installation. Filters on all air equipment are routinely changed twice a year. An inventory of all combustion equipment is maintained by our Facilities Director and appliances are inspected annually.

Integrated Pest Management

We have an Integrated Pest Management policy in place and follow the principle of prevention as the first step. Secondary steps would be the usage of bait traps or sticky traps. Our log contains visit dates, action taken and products that may have been used. Any product usage would not be done until students and staff have left the building and are not scheduled to return back for a minimum of 8 hours. All SDS sheets are kept in the log and are readily available in the Facilities Department.

Two years ago our Safety Committee was created. Members of the Safety Committee include key members of the Leadership Team, Department Heads and Facilities Staff. The Committee reviews all safety issues, including: general safety & security, school emergency response, hazardous materials storage and disposal, equipment safety, chemical storage and inventories, and Integrated Pest Management. Our Facilities Director is the Chair of this committee. The Safety Committee meets bi-monthly. Through this process hazard sources were identified. Chemicals stored in the Science labs, Art Departments and Facilities were inventoried and proper storage cabinets acquired where needed. In the science labs all mercury containing thermometers were properly disposed of and replaced. Faculty and Facilities personnel were required to determine what hazardous materials were needed and if an alternate "less hazardous" chemical could be used it was acquired. All surplus and/or expired chemicals were safely removed and disposed of properly.

To ensure Safety Data Sheets (SDS) are readily available and current we are selecting a web based system that can be accessed from any desktop or portable device for quick retrieval of the latest SDS.

Our Emergency Management Plan is quickly available to all employees covering school procedures in the event of a chemical spill, gas leak or hazardous materials release using the Navigate Prepared Flipchart App. This is also accessible from any portable device.

In October of 2015 Facilities completed a mercury products inventory. All mercury compounds were eliminated from classrooms and storerooms. Mercury lab thermometers and lab barometers were eliminated from the classrooms. Mercury fever thermometers and mercury blood pressure cuffs were eliminated from the nurse's office. We have a mercury spill plan and have identified a contractor trained to respond to mercury spills. Our Facilities Department recycles fluorescent bulbs.

Smoking is prohibited on campus and signage is posted at school entrances.

All paint used is on campus VOC free.

All classrooms and offices are visually inspected weekly and are kept free of mold, moisture and water leakage. An on line reporting system is in place for staff to easily report problems that may occur for quick remediation.

There has been no usage of Chromated Copper Arsenate within the past 12 months.

Tunnel systems that house our boiler lines and water pipes are kept dry and free of debris.. Leaks are corrected when identified. Our roof systems have been maintained, and recently replaced where necessary.

Part Eight: 2B: High standards of nutrition, fitness and quantity of quality outdoor time for both students and staff

Onsite Garden

Our Garden Club became the Seeds of Service (SOS) Club in March of 2013. SOS, a service learning club available to all members of the student body, partnered with the Rocky River Community Gardens in April, 2013. We were given a free 5 x 20 foot garden plot and received a $75.00 grant from the Master Gardener Volunteer Program to purchase plants. With seven student volunteers working over the summer months, the group donated over 320 lbs. of vegetables to the Rocky River Meals on Wheels Program.

Students wanted a garden on campus to extend the growing season. With funding received from the Lakewood/Rocky River Rotary Club and the HMs we were able to construct a 20 x 24 foot Gothic Arch Hoop House. Organic gardening began on campus in late July, 2014. Students additionally constructed a spiral herb garden, butterfly garden and walking path. To date, the group has donated over 670 lbs. of organically grown vegetables. Additionally, students are tending our five fruit trees, native berry bushes and plan on creating an apple orchard.

SOS members also maintain donated cafeteria plants (Al Wilhelmy Florists) adding beauty and rejuvenated air to the dining space.

The Hoop area was expanded in 2015 to include an adjacent 3-season outdoor classroom space. Our 12 x 20 foot shade pavilion accommodates classes, sports teams, special lectures and growing projects related to the Hoop House. The Hoop House area is a Certified Wildlife Habitat through the National Wildlife Federation and also certified and registered as an official Monarch Waystation through Monarch Watch, University of Kansas.

Cuyahoga County Board of Health is invited annually to conduct an informative health clinic for students and staff members that will be traveling during our summer immersion trips to locations in Ecuador, the Mexican border and Immokalee Florida.

Our Main building has a beautifully landscaped courtyard and pond and in 2016 a Grotto with seating was constructed in an underutilized turf area to include a pond. Both spaces are an extension of the classrooms and are easily accessible to the school community.

Our Health and Physical Education program strives to promote holistic health through a wellness approach, which stresses the need for balance in one's life. The program philosophy emphasizes the physical, intellectual, emotional, social and spiritual development of well-rounded young women and the importance of lifetime fitness. Students are prepared to make responsible decisions, appropriate value judgments and act in ways which contribute to good personal health.

Big Lil Sis Challenge
This all school, day long competition pits Senior/Sophomore teams against Junior/Freshman teams in outdoor field games and activities. Faculty and Staff facilitate the day's events.

Sports Teams
Fall: Cross Country, Field Hockey, Golf, Rowing, Soccer, Tennis, Volleyball
Winter: Basketball, Bowling, Gymnastics, Indoor Track & Field, Swimming & Diving
Spring: Lacrosse, Rowing, Softball, Track & Field

Over 65% of our students participate in at least one team sport.

The Streaks Fitness Center was renovated in the summer of 2015. The facility houses cardio vascular and weight training equipment, and is open to our students, faculty and staff.

Students are encouraged in the use of UV protection when participating in outdoor activities.

Part Nine: PILLAR THREE: 100 percent of the school or district's graduates are environmentally and sustainability literate

Throughout our curriculum environmental and sustainability concepts are integrated.

- AP History, "Geography and the environment" in terms of impact on the development of economies, Subjects of the Hudson River Valley School, expansionism, preservation vs. conservation (Muir vs. T. Roosevelt),"Dustbowl", military strategy, cattle industry, expansion of railroads, mining, timber management, national park system, *Silent Spring*,

American Beautification Act, Love Canal and the EPA. Most of these topics are addressed in US History.

- AP US Government, environmental policies (agencies) of the US government, compare/contrast policy positions of the Republican/Democratic Parties and the Catholic Church . Students explore interest groups that address different areas of environmental and energy policy.
- Chinese IV class discusses recycling and environmental issues, comparing China, Japan and the US. Students present their research with an emphasis on recycling at home.
- AP Spanish and Culture studies current events, hurricanes and natural disasters that could be attributed to climate change. One theme is global challenges including a context on environmental issues. Heidi Paul came into AP to talk about her field study in Paraguay and Perú emphasizing recycling, sustainability and conservation.
- Spanish 3 does an 'Integrated Performance Assessment' based on food choices, sustainability and conservation.
- AP French, "world challenges" focuses on environmental issues, effect on society and how society is addressing these issues in USA, France and Africa.
- French 3, Project Africa where students explore environmental issues affecting the francophone country they are researching.
- Arabic utilizes the Hoop House area to identify vegetables and fruits.
- Visual Arts use existing or used materials to create: sculptures, mobiles, 3D assemblage pieces and collage using fabric, carpet and wallpaper samples from donations. Students bring in bottles, milk cartons, etc.
- Metals uses scrap metal for practice projects and assignments.
- Donations of "things “are accepted throughout the year for use in the art curriculum. (yarn, buttons, yogurt containers, etc.).
- AP Economics studies shark finning, supply and demand. By making sharks more valuable alive than dead, the practice of finning is slowly changing. Then we shift the curves.
- STEM class is planning a spring project "Water, Water Everywhere: *What's in your water? How did it get there? How does it affect your body?”* Students choose what water they test, setting up the experiments, test for various contaminants. Their final product will be a public awareness notification: brochure, commercial, song.
- Physics: "Life's a Beach”, students create a contraption to protect a child from UVB rays. They then develop three experiments to determine: Are all sunscreens created equal? Are expensive sunglasses worth the money? Is clothing marketed for sun protection really protecting? They report findings back to the class.
- Honors advanced chemistry investigates causes of acid rain and ways to lessen man-made pollutants.

Our curriculum is aligned to the state 2010 science standards.

- Class of 2019-99% passed Science on Iowas with 3 or higher.
- Class of 2020-90% passed Science on Iowas with 3 or higher.

Are professional development opportunities in environmental and sustainability education available to all teachers at least every other year?

Yes, Care for God's Creation, one of the Catholic Social Teachings, is included in our faculty/staff Mission Day programming. It is reviewed in the Pope's Encyclical on the Environment: Laudato si': *Care for our Common Home*, and presented to Faculty, April, 2016. .

Presentation February, 2017, by Dan Misleh, Director of the Catholic Climate Covenant (cf. www.catholicclimatecovenant.com), in Washington D.C. at Magnificat. Local environmental groups and schools attended. Magnificat's Sustainability and SOS Club students showcased Magnificat's efforts to be a sustainable campus, which Dan Mishley called exemplary. The evening included a conversation concerning the environment, climate change and current issues.

Our environmental education curriculum pays particular attention to scientific practices, such as asking questions, developing and using models, planning and carrying out investigations, analyzing and interpreting data, using mathematics and computational thinking, constructing explanations and engaging in argument, and applications based on evidence.

Biodiversity questions blitz our campus; food web interaction posters; removing/identifying keystone species; how elements cycle in ecosystems; which substance P, N or synergy between N and P cause eutrophication and algae blooms; how do human populations use resources; the difference between sustainable and industrial food production; where does waste and water waste go, how is it treated; what is hazardous waste; what is indoor air pollution; student presentations on household hazardous waste and its effects on humans and environment; differences between hard and soft water; how much water and electricity does an average teenager use; where is the most and least particulate pollution on campus; how well does sunscreen protect from UV rays; what do food labels mean; how solar ovens work.

Models:

- Earth/shore, which heats faster causing hurricanes.
- greenhouse gasses in atmosphere.
- food coloring and spot plates with diminishing parts per million.
- ecosystem showing energy transfer.
- how land forms affect climate.
- landfills and compost.
- rabbit population.
- predator/prey resource activity.
- oil spill cleanup.
- temperature inversion's - how they trap pollutants near surface of earth e.g.. Denora, PA.
- acid rain production.
- Design/build sustainable city based on land use knowledge.

- mining chocolate chips in cookie showing natural resource destruction.
- fossil fuel ash.
- CO2 pollution produced from candle.

Investigations

- Vernier lab equipment measuring changes associated with heat from sun.
- how behaviors of mealworms affect their ability to survive.
- cleaning polluted water using methods from water treatment plants.
- personal solid waste in lunches.
- how education and parenting skills affect survival of bubble "babies" in human population.
- problems associated with oils spills on wildlife/shore/plants.
- hard/soft water positive and negative effects on human health.
- calling 800 numbers on food labels for information on where good was produced.
- analyzing/interpreting data gathered heating up geosphere vs hydrosphere, applying specific heat, physics applications.
- math/computational analysis; graphing data sets using excel/ google sheets with lines of bet fit showing trends, trends from graphed data, quantified data from waste in lunches, most common categories and why, slide placement for gathering data on particulate pollutants on campus, why these were high or low, how to determine wind direction based on acid precipitation and cities' pollution release, analyzing how well sunscreen products protected UV paper, and why it is good to know (health) where food is produced based on food label, how to eliminate or decrease CO2 production from burning fossil fuels.
- explanations/arguments- students have a debate on climate change and do not know which side they will have to represent, must investigate both sides, justify placement of city parcels in land use model
- all points above are used in formal lab reports twice a year using APA formatting and abstract, introductions with peer reviewed journal articles as citations, methods, data, results, discussion and conclusions based on evidence from the lab

Students have meaningful outdoor experiences at every grade level.

- Sacrament class (Sr Theology) have a nature prayer experience in September where they read Genesis and focus on a specific thing in nature and write a prayer about it. Prayers were shared while sitting in the pavilion.
- The Marine Science Club field trips, students engage in experiential learning on the Floating Lab in Hinckley Lake, among others.
- Environmental Science- open to 10th, 11th and 12th grades.

Students:

- participate in a two day biodiversity investigation identifying an area on campus with the most biodiversity and quantifying their findings; investigate invasive species, cause of spreading and problem solve ways to stop spread.
- visit a recycling center/landfill, investigate solid waste in their lunch and use critical thinking to decrease their waste; Waste is placed in a "classroom landfill" and some in a "classroom compost " and observe the natural processes.
- investigate the addition of Nitrogen, Phosphorus or a combination in pond water by adding samples and growing algae for three weeks.
- problem solve how to clean polluted water to make it potable; investigate the use of natural products to clean an oil spill, observe oil eating bacteria, identify problems that cannot be cleaned.
- visit a waste water treatment plant, observe how waste is removed.
- use slides placed on campus to collect data to investigate air pollution.
- use products to investigate efficacy against outdoor ultra violet radiation.
- investigate how to cook s'mores using solar ovens.
- can study bison, wolves, invasive species and land use ecology in Yellowstone National park, summers.

How are the sustainable elements of your building used as an educational opportunity?

- students model sustainable behavior in cafeteria sorting, recycling, composting lunches.
- Rationale given for turning lights out when sun is out in classrooms.
- eaves are studied for how they reduce solar radiation in summer but let solar radiation in classrooms when sun is low in winter.
- deciduous tree placement discussed in reducing solar radiation in summer, allowing it in winter.
- “No Idling Campus” reduces greenhouse gas emissions creating cleaner air.
- rain garden demonstrates permeable vs non-permeable land and runoff storm water.
- Ohio Native prairie used to demonstrate a biodiverse habitat where gasoline powered lawn equipment is not used decreasing campus carbon footprint.
- Facilities Director gives tours during Advisory for students to learn about mechanical systems and sustainability efforts.

Part Ten: Element 3B: Use of the environment and sustainability to develop STEM content knowledge and thinking skills to prepare graduates for the 21st century technology-driven economy

The science curriculum consists of those courses and activities that allow the individual student to interact with science as a discipline and to experience empirical inquiry as a method of investigation. An understanding of the nature of science is stimulated through the use of the laboratory as a focal point for engaging in the processes of science. Opportunities are provided for students to apply methods and knowledge of science to formulate possible solutions for the problems of society. The science department promotes an atmosphere in which students become aware of the dynamic balance within the biosphere and learn to value themselves and the created world as a gift of God and therefore accept responsibility for stewardship of the earth.

Biology, college-prep or honors, is a required course for all freshmen. It is typical for a sophomore to take Chemistry, college-prep or honors, juniors to take Honors Advanced Chem/Bio, AP Chem or AP Bio. Most seniors opt for one of the Physics options, college-prep, honors, or AP. Students also have the option to take Environmental Science in 10th, 11th, or 12th grade.

Twenty percent of our students enrolled in an AP Science or Math course for the 2017-18 school year. The AP courses available include Statistics and Calculus, Biology, Chemistry and Physics. There is also a semester-long Project-Based STEM course that students can choose as an elective.

Our curriculum provides a demonstrated connection between classroom content and college and career readiness, particularly to post-secondary options that focus specifically on environmental STEM and sustainability fields, studies and/or careers.

Our "basic" level of science courses, including Environmental Science, are taught at a college-prep level. We also offer honors and AP options for Biology, Chemistry, and Physics. These curricula all include topics related to sustainability and the environment. Here are some examples:

- Students in Honors chemistry have done a number of projects that are linked to environmental sustainability and work in the outdoors. One year students did a project and presentation on the Flint water crisis and the issue of clean/sustainable water sources. Last year, students collected water samples from various locations near their homes and studied water quality parameters over the course of the semester.
- Many of our projects are based in problem solving and skill development including inquiry-based labs and independent explorations. In all of their science classes, students are learning to record data in lab notebooks, just as professionals in science fields do. Students learn how to use research databases, read academic journal articles, and prepare research reports. Students learn to conduct their own research projects, create controls, and communicate findings through written and oral presentations.

We offer AP classes in Statistics, Calculus, Biology, Chemistry, and Physics. We also have a Genesis program in which students are able to explore different careers options. We regularly have students who design projects with an environmental focus.

Although we do not have a formal STEM Career program, we partner with The Ohio State University to participate in their STEM Ambassadors program. Six Magnificat Alumnae came to speak to current math and science students about careers in engineering. The STEM Ambassadors, all 3rd or 4th year engineering students, shared their experiences in the fields of Electrical and Computer Engineering, Chemical and BioMedical Engineering, Industrial and Systems Engineering, Mechanical Engineering, Civil Engineering and Chemical Engineering. This program will continue in 2018-19.

Part Eleven: Civic engagement knowledge and skills

Our school takes every opportunity to develop student civic engagement knowledge and skills in the community.

- SOS Club received a Certificate of Special Recognition from the City of Rocky River for "outstanding volunteer efforts" in the cities Community Garden, October, 2013.

- SOS Students presented the Hoop House project at the Lakewood/Rocky River Rotary Club luncheon, 2015 and skyped with a 7th grade Science class at Lee Burnenson Middle school to share their Hoop House video and answer questions about growing vegetables using organic methods, 2016.

- St. Rocco grade school students traveled to visit our Hoop House in 2015.

- Genesis, a Senior student graduation requirement is self-selected by the student. In 2016, a Senior planned and installed a campus Rain Garden, diverting 2,500 sq. ft. of roof rainwater from the sewer system.

Retreats

Freshman Heritage Day

Every September freshmen travel to Villa Maria, Pennsylvania to spend the day at the motherhouse and farm of the HMs. The Villa operates on 726 acres in Villa Maria, PA. Land management at the farm is based on spirituality, sustainability, simplicity and the preservation of all local life systems. This "Heritage Day" provides all with an opportunity to learn the history and identity of the school and the beliefs.

Sophomore Day of Retreat

Sophomores stay close to school so students are able to walk to the retreat location. Students bring reusable water bottles and lunch served is a simple meal of bread and soup. Throughout the retreat, themes of simplicity, service, and compassion are points of reflection. We discuss wants vs. our needs and consider ways in which we are able to help others in need. The day ends with students making hundreds of lunches to donate to local organizations that feed the homeless.

Junior and Senior Retreats (Students must make one)

- Villa Service Retreat, Villa Maria, PA. Students stay on site for the week and assist with working the farm.
- Kairos Retreats, Villa Maria,Pa.
- Day Long Art, at a Lake Erie Beach.
- Day Long Nature, Jesuit Retreat House.
- Overnight Nature, Hocking Hills.
- Wellness Retreat, Rivers Edge.

Sophomore Theology students encounter ways they can respond in charity to the various social justice issues that exist in our world today. Students reflect on and process their 30 hour local community service experience through class activities, discussions and journal assignments, freshman to sophomore year.

Field Trips

- Environmental Science classes walked to West Shore Unitarian Church to observe installed solar panels and view the educational displays.
- NASA, Young Astronauts Day.
- Landfill-Recycling Center.
- Villa Harvest Day Outreach.
- Holden Arboretum.
- Genetics Conference at Rocky River High School.
- Science classes walk to Earth Fare.
- Sustainability Tour at Mitchell's Ice Cream.

Outdoor learning Spaces

- Hoop House & Shade Pavilion
- Grotto
- Courtyard
- Marian Commons Patio
- Grounds, 19 acre campus

Magnificat finished in 1st place at the NASA Young Astronauts Day in October.

1st place in the Robotic Arm Challenge.
2nd place in the Space Materials Challenge.
2nd place in the SCaN Challenge.