2007 Governor's Award for Pollution Prevention and Sustainable Practices Application Form

Please note: By applying, applicants grant permission to the Washington State Department of Ecology to publish a summary of their accomplishments.

Company/Organization Name: Whitman Mission National Historic Site

Product/Service: National Historic Site/Park visited by the public

Facility location: 8 miles west of the city of Walla Walla, Washington

Mailing address: 328 Whitman Mission Road, Walla Walla, WA 99362

Web address: http://www.nps.gov/whmi

Contact name: Bruce Hancock Title: Chief of Maintenance

Telephone: 509-522-6359 Fax: 509-522-6355 E-mail: Bruce_Hancock@nps.gov

If someone other than the contact person completed this application, please provide the following information, in case we have questions.

Name: _____ Title: _____

Telephone: _____ Fax: _____ E-mail: _____

Address: _____

Have you applied for this award before? NO If so, when? _____

Are you submitting attachments? YES Are you sending them separately? YES

Are you a: ☐ Commercial enterprise? ☐ Not for profit organization? ☒ Government? ☐ School?

How many employees or regular volunteers do you have? 11 Full-time employees with an additional 5-8 seasonal employees.

List any environmental permits you have (air, water, waste) and their ID numbers. NONE

1. Briefly describe your business or organization. Whitman Mission National Historic Site, a unit of the National Park Service, U.S. Department of the Interior, is the site of a mission founded in 1836 among the Cayuse Indians by Marcus and Narcissa Whitman. As emigrants began moving across the continent into the Pacific Northwest during the 1840's, the mission also became an important station on the Oregon Trail. Approximately 80,000 visitors come here each year. Our purpose is to conserve the scenery and the natural and historic objects and the wildlife therein and to provide for the enjoyment of the same in such a manner and by such a means as will leave them unimpaired for the enjoyment by future generations.

2. Have you received any environmental awards during the last five years? YES. **What and when?** In 2006, Whitman Mission National Historic Site received three awards from the Environmental Protection Agency (EPA) Region 10 through their 2006 Champions of Environmental Leadership and Green Government Recognition Program. The award categories we won are: Renewable Energy – Photovoltaics, Environmental Leadership and Innovation, and Alternative Fuel Use. We are the first in Region 10 to receive three (3) EPA recognition awards in a single year.

In 2006, Whitman Mission NHS was recognized by the General Service Adminsitration as their national "Finalist" through their GSA Achievement Award Program" in Sustainability.

3. Have you had any environmental violations during the last five years? NO **What and when?** N/A

4. How is your product or service environmentally superior to others? Many facilities and individuals have utilized environmentally friendly technologies and products for years. What separates Whitman Mission National

Historic Site from other is the holistic approach to resource stewardship. The staff is constantly evaluating park operations and actively looks for ways to incorporate environmentally friendly ways of doing business. Ideas that have been considered and implemented range from blending our own biodiesel when local suppliers did not carry such product to purchase and installation of a tankless hot water heater after a staff member attended a local Home Show.

5. How are your efforts innovative from common practices? The difference we see between innovative efforts and common practice is that innovative efforts represent the responsible choice, a choice that helps the environment by eliminating waste and lessens the amount of nonrenewable resources taken from the environment. Whitman Mission National Historic Site uses renewable energy, B20 biodiesel alternative fuel, bio-based lubricants, and recycled-content products. We recycle and compost solid waste materials, diverting 90.5% of our solid waste from entering a landfill. We conserve water by reducing consumptive use through conservative measures. We utilize a host of environmental friendly "green" products in lieu of commonly used products. We've demonstrated to others that environmental responsibility is a goal that we and all should embrace. It has become part of our everyday operations. Private citizens and others contact the park frequently to learn from all of these efforts. People should never doubt that a small group of thoughtful, caring, and committed employees can contribute and make our environment safer, cleaner, healthier and Greener for everyone as we have proven otherwise.

6. How have you shown environmental leadership? In the last five years, Whitman Mission NHS staff has been proactive in leading by example. Our efforts resulted in less water and energy used, less toxins in the environment, less solid waste entering landfills, less taxpayers dollars spent, and a healthier, safer environment for our visitors and employees.. Innovative ideas, working together, and partnering with others allowed the park to achieve these results.

Park staff has embraced the concepts of Environmental Management System (EMS) to holis*tically* manage and operate our park to reduce our impacts on the environment. EMS has helped the park go beyond compliance with regulatory requirements to incorporate sustainable practices into our day to day practices. We practice *continuous improvement*, identifying and prioritizing activities and impacts, and developing actions to implement goals and targets. Monitoring and reviewing our EMS program, with support from our Superintendent, keeps us on track and aligned with our Commitment Statement. In particular, our achievements are helping reduce our carbon footprint, and, in our small way, we set an example in combating global climate change. Thinking globally and acting locally is practiced by the park staff and is demonstrated by the numerous actions and projects completed in 2006.

7. What have you done to reduce your consumption of materials? We've been successful in reducing our consumption of virgin materials simply by purchasing products designated on the EPA's CPG list as containing post-consumer and recovered content materials. When we purchase toilet paper for example, the tissue contains 30% recovered material and includes 30% postconsumer material. In short, we've reduced the purchase of virgin materials used to make toilet paper by 30%. When we purchase re-refined motor oil, it doesn't wear out, it simply becomes dirty as it does its job before it undergoes re-refining to remove all contaminants. When done it is equivalent in every aspect to virgin oil, a nonrenewable resource, thus reducing our consumptive use of virgin oil, a nonrenewable resource. When computers have reached the end of their useful life cycle, they are donated to schools for reuse rather than disposal. During demolition projects, our contract specifications call for the reuse of whatever building materials are salvageable. This reduces disposal costs and reduces our consumptive use of new materials. When we switched from incandescent to compact fluorescent lamp use, the life expectancy for the lamp has gone from 700 to 10,000 hours respectively, thus reducing our consumptive use of lamping. When the park receives a box containing foam peanuts, they are saved and reused, thus reducing the purchase of new foam peanuts for consumptive use. The list goes on.

8. What have you done to change to materials that are more sustainable? To make sustainable practices a reality, management has created an atmosphere in which innovation can easily flow up the chain of approval and application, thereby motivating all employees to be part of the greening of our park. We continue to educate our employees about sustainable practices to the extent that green practices have become the normal approach to protecting the natural and cultural resources under our care. The task of motivating employees and educating visitors on sustainability issues has succeeded because we have made them part of the solution.

Sustainable materials: B20 biodiesel is used for all diesel fuel applications. We have recently (2007) increased our biodiesel to B30 park wide. Propylene-glycol antifreeze containing no ethylene has replaced ethylene glycol antifreeze. Ozone depleting chemicals have been eliminated park wide. Non-toxic, biodegradable janitorial and equipment cleaners are used. Bio-based penetrating lubricants, bio-based bar & chain oil, soy-based two-cycle engine oil, soy-based parts cleaner/degreaser, bio-based food grade grease, bio-based cutting oil, bio-based gear oil, and bio-based hydraulic fluids

have replaced petroleum based products park wide. Recycled-content carpeting is installed in our Visitor Center. When it was time to dispose of the 5000 pounds of the old carpet, it was recycled using the Waste to Energy method instead of being disposed of in a landfill, offsetting the burning of fossil fuels for energy production. Interior and exterior lighting equipment has been retrofitted over to energy efficient fluorescent lighting. Recycled (plastic) lumber is used for rehabilitating signs, picnic tables, benches, bridge curbing and parking stops. Recycled plastic is used for restroom partitions, signs, and recycling containers. Reprocessed latex paint is used for painting facilities. On-site composted soils are used to augment soils on park landscaped areas. Rechargeable batteries are used and recycled when they are spent.

9. What recycled material do you use? Laser printer, fax machine and laser jet cartridges, photocopier paper (30% post-consumer material), toilet paper and paper towels (30%), office supplies, plastic trash bags (25%), re-refined motor oil (100%), recycled plastic restroom partitions (50%), recycled plastic lumber for park entrance signs (50%), picnic tables, sign posts, and bridge curbing (100%), recycled plastic recycling containers (100%), recycled carpet .

10. What have you done to reduce your consumption of fresh water? In 2006 a review was conducted to identify uses and potential conservation solutions to help us more effectively manage the water utilized in park operations. Highlights of the conservation measures taken are listed below:

- Water use in the park has been approximately 2.2 million gallons on an annual base. A savings of 600,000 gallons annually, or 25% of total use, was achieved with the replacement of the old heating and cooling system in the park residence. Not only did the old system remove 600,000 gallons of water from the aquifer but that water was processed through the potable water system before being delivered to the old heat exchanger and then discharged. So not only did this conservation measure save water it reduced electrical demand by eliminating the need for pumping.
- Conventional 5-gallon per flush toilets were replaced with pressurized tank system toilets designed to use only 1.6 gallons per flush. This reduced the water demand for toilets by 68%.
- Conventional shower heads, rated at 5 gallons a minute, were replaced by water miser heads with a flow rate of 2.5 gallons per minute thus reducing water consumed for showers by approximately 50%.
- A Falcon waterless urinal was installed in the public restroom at the visitor center. Approximately 48,000 gallons of water per year are saved by replacing the conventional urinal that used approximately 3 gallons of water per flush.
- The six toilets in the visitor center restroom were retrofitted with new flushometer valves that require only 1.6 gallons of water. The conventional valves used 3 gallons each flush. The new valves conserve 47% of the water previously used in this public restroom.
- Native vegetation has been incorporated in the landscaping about the public buildings in the park. These native, drought resistant, plants require less water than the traditional ornamental plants used in most landscaping. All irrigation is done through programmable timers set to reduce water loss through evaporation.
- Part of solid waste program includes the diversion of vegetative matter into our composting efforts. This water retaining composted soil is added where needed to irrigated landscape areas for holding in moisture and reducing irrigation run times.

11. What have you done to reduce your consumption of energy? Manual light switches have been converted to infrared and motion type occupancy sensor controls. Programmable electronic thermostats has replaced manual thermostats on all heating and cooling systems for controlling their on/off run time set points. T8 fluorescent light tubes and electronic ballasts have replaced T12 fluorescent light tubes and electromagnetic ballasts. Compact fluorescent lamp technologies are used, replacing inefficient incandescent lamps. A tankless on-demand hot water heater is installed in the 3500 SF maintenance shop, replacing the old tank-type hot water heater. Energy efficient exterior doors and low-E windows have replaced inefficient building components. *Energy Star*-listed equipment with power down capabilities such as computers, printers, fax machine, and photocopier are used park-wide. A Watt Miser control unit has been installed on the soda vending machine to reduce compressor run times without compromise to the products temperature quality. Four off-grid photovoltaic parking lot/security lighting systems has been installed, replacing on-grid powered systems previously used. A new 11.4 kW grid-tied photovoltaic system has been installed on the roof of the park maintenance shop. Not only does the system generate “green” energy, it also provides shade to the roof, reducing cooling system energy demands. Programmable timers are installed and set for evening operations to our irrigation system pump run times when water loss to evaporation is low, thus reducing energy use for pump operations.

12. What have you done to switch to renewable sources of energy? In the winter of 2005, we designed and installed a grid-tied photovoltaic power plant on the roof of the park maintenance building. Continual improvements to the original 9.1 kW net-metering system has led to an increased 11.4 kW system in 2006 and in partnerships between the

National Park Service, Bonneville Power Administration, Bonneville Environmental Foundation, and Pacific Power and Light. This project has reduced the parks dependency for on-grid energy use by 30%. This was the first net metering arrangement with Pacific Power and Light in Washington State.

The PV power plant consists of 60 190 watt solar modules (panels) and three Fronius inverters. When fed into the PP&L electrical grid, annual production under optimum conditions will generate up to 17,975 kilowatt hours of renewable energy. In 2005, the park used a total of 60,060 kWh of grid supplied power which released 10.25 metric tons of carbon pollutant into the environment. In 2006, carbon emissions were reduced by 3.07 metric tons or 30%. Whitman Mission is the first National Park site in Washington State to have a solar generating plant with a major public utility. This project provides a nice example for others to follow.

13. What have you done to reduce waste and emissions?

Waste Reduction

Solid Waste: In 2006, the park produces a total of 51.7 tons of solid waste material. Of this, 46.8 tons or 90.5% are diverted away from disposal to landfills through our composting and recycling efforts. A total of 4.9 tons of waste materials are disposed, 0.7 tons of recyclable materials (aluminum cans, scrap paper and cardboard), and a total of 46.1 tons of composted/diverted materials (48,000 pounds of grass clippings , 40,500 pounds of leaves and 3,750 pounds of wood chips). Waste reduction is also achieved through other actions such as scratch paper is used as notepads, computerization has reduced paper use, the use of refillable pens and pencils is employed and encouraged, mulch mowers are used on park grounds when not reclaimed for composting, recycling containers are clearly marked to distinguish from garbage containers. The park avoids waste generation by avoiding food production and distribution.

Emission Reductions: *Photovoltaic Use*- In 2005, the park used a total of 60,060 kWh of grid supplied power which released 10.25 metric tons of carbon pollutant into the environment. In 2006, carbon emissions were reduced by 3.07 metric tons or 30% through the use of 17,975 kWh of "green" solar energy.

Biodiesel Use- In 2006, Whitman Mission decided to test biodiesel as alternative, clean burning heating oil. The 3500 square foot maintenance shop, with a 700 gallon above-ground fuel tank, became our test facility. Biodiesel has been used in heating fuel applications at the B5 blend in other parts of the country, and some studies have taken place on B20 blends, but little information was available related to actual experiences using the B20 blend. This pilot project was established to reduce emissions and share the lessons learned with private, commercial, and government facilities.

Biodiesel in any blend was not available in the local area. However, pure B100 soybean oil was available from a supplier 250 miles away in Portland, Oregon. Purchasing the B100 and subsequently blending on site made the transportation more manageable. We transported 140 gallons of B100 soybean oil back to the park. We mixed the B100 with 560 gallons of locally purchased #2 diesel heating oil to get a B20 blend. After blending, we turned on the shop oil-fired furnaces for winter operation and added a recirculation pump to the shop furnace to facilitate maintaining a homogeneous blend. Over the course of the winter we experienced outside temperatures down to 9 degrees Fahrenheit and experienced no equipment failures, fuel gelling problems, or comfort compromises to the heated spaces.

With the success of the pilot-test, we expanded our use of B20 in the park to our 2000 gallon fuel storage tank used for heating to our 6,800 square foot Visitor Center and all park equipment designed to use diesel fuel. In less than a year, the park has gone from 0% to 100% in the use of B20 for all diesel fuel applications. This effort has also had the added benefit of reducing our annual fuel costs by 10%, making B20 biodiesel a cost-effective alternative fuel choice park wide. The use of biodiesel reduces harmful emissions such as carbon dioxide, a gas linked to global warming. Whitman Mission's use of B20 biodiesel has reduced our carbon dioxide emissions by 16%. Nitrogen oxide and sulfur dioxide emissions have also been reduced by 20% through the use of B20 biodiesel. Since biodiesel contains more oxygen by weight than fossil fuel, it burns more completely, reducing the unburned fuel emission toxics such as particulate matter, hydrocarbons and carbon monoxide released into the environment by 20 to 40%.

14. What have been the economic benefits of your efforts, to your company and your community? What have been the costs?

Purchasing local water conservation devices, alternative fuel, and other green products supports local business revenues while at the same time reducing our electric costs for pumping water, reduced solid waste disposal fees, landfill operations overhead costs, and our "green" solar generation plant has reduced our on-grid power demand by

30%. By following our lead, local government, businesses and private citizens can achieve the same types of fiscal and environmental attributes as we have.

15. What have been the benefits to your employees or volunteers? There are emotional and physical benefits to the environmentally friendly practices being used at Whitman Mission NHS. Our staff is pro active in reducing the carbon footprint at the park. This has manifested itself in pride and a positive outlook that contributes to emotional health. The physical benefits manifest itself in indirect and direct ways. Being good resource stewards contributes to the overall environmental health of the plant and as such improves the quality of life for both the staff and general public. Environmentally friendly produces used in daily operations exposes the staff to fewer harsh chemicals making the work environment safer and healthier.

16. What have you done to support your local community? To support our global community? All of our highlighted practical actions save energy, water, money, improves the comfort and productivity of employees, and benefits the environment. These actions have far reaching implications not only for the protection of local resources but for the responsible use of the resources of the planet. The significance of the projects and actions taken is local, regional and global in scale. They have a direct impact on global resources and are applicable to all areas of the world. Our $75K grid-tied PV project not only generated letters to the editor in the local paper but the Editorial Board dedicated space to show support for both the achievement and the effort saying, "not only does it make good business sense but it's also the right thing to do". The water conservation achieved through a variety of projects ($10K) is also quite significant not only in the actual water saved but in the visibility. Eastern Washington has a limited water supply. Local government is continually reviewing ways to conserve water. Through our actions and effort, the park can show a 30% reduction in water use. The scale of the individual projects may not generate a large footprint. However, leading by example, and sharing these individual small steps when viewed collectively has produced meaningful reductions at all levels, providing a platform of success for other to follow.

17. What have you done to reduce negative effects upon biodiversity from the manufacturing or use of your products or services? How can we not utilize sustainable energy and practice environmental leadership in order to promote and regulate the use of the park site by such means and measures that will protect resources? Before we make a purchase we ask ourselves: Is it really needed? Can the existing item be fixed? Can it be donated? Are renewable resources used in its production? Is it biodegradable? Biobased? Durable/reusable? Is it non-toxic? Does it have simple maintenance? Is it recyclable? Is it made from recycled content? Is it found on the EPA's Comprehensive Procurement Guide (CPG) of products? If the answers to these questions are YES, we can then expect to reduce negative impact on the environment from their uses.

18. Do you follow environmentally preferable purchasing guidelines? Yes. **Describe them.** For recycled content and environmentally preferable products, Whitman Mission looks for products designated in the Environmental Protection Agency (EPA) *Comprehensive Procurement Guidelines* (CPG) http://www.epa.gov/cpg that have a reduced impact on human health and the environment when compared with competing products that serve the same purpose. We also review the guide *Greening the Government Through Recycling, Waste Prevention, and Federal Acquisition,* located on the Office of Environmental Executives (OFEE) website at http://www.ofee.gov This guide and others found there provides an excellent overview of federal greening and green procurement, Executive Orders, etc. We also use National Park Service guides such as *Green Office Practice Guide* and *Best Management Practices Guide* in Greening the Parks. These guides and other valuable resources can be found at http://inside.nps.gov/regions/region.cfm?rgn=319&lv=3

19. If you sell a product, what happens to it after its use? Can it be recycled? Is there a take-back program?

Whitman Mission National Historic Site is not in the business of manufacturing and selling products. However, as a federal agency purchasing products from manufacturers, preference is given to those products that are environmental friendly, both from a non-toxic and recycled content basis.

Whitman Mission NHS uses re-refined motor oil for all of our gasoline and diesel engine applications. As more and more people become aware that oil is a non-renewable resource, they realize that used oil should not be wasted, and that it can be continually re-refined and reused over and over. As such, Whitman Mission NHS uses re-refined motor oil for all of our gasoline and diesel engine applications. As a federal agency, we purchase our re-refined motor oil from the Defense Supply Center Richmond. By doing so, we participate in a Closed Loop Re-refined Oil Program where our used oil is removed at no cost and re-refined again.

Use this form to show your measurements. Add more pages and categories as needed.

Measurements of Achievement	
Material	**How much per month or year?**
Reduction or elimination in the use of toxic material (pounds, tons, gallons, etc.)	
Petroleum based products	All petroleum based products previously used in our maintenance shop operations has been eliminated and replaced with bio-based products.
Ethylene glycol	Propylene glycol used in all park owned vehicles and equipment.
Custodial products	Green custodial products has replaced traditionally used custodial cleaning products.
Diesel #2	B20 Biodiesel is used for all diesel fuel applications parkwide.
Reduction in consumption of non-toxic material (pounds, tons, gallons, etc.)	
Foam packing peanuts	Saved and reused instead of purchasing new.
Virgin toilet paper, paper towels	All toilet paper and paper hand towels contain 30% postconsumer materials.
Metal restroom partitions	All restroom partitions are made from 50% postconsumer plastic materials.
Wood Entrance Signs	Two large park entrance signs are made from 50% postconsumer plastic materials.
Reduction in energy use (Kilowatt-hours, BTUs, etc.)	
Electricity	Energy conservation actions have reduced grid supplied power from 60,060 kWh/yr to 42,085 kWh/yr or 30% in 2006. Photovoltaics, occupancy sensors, programmable thermostats, and relamping efforts have all contributed to reductions realized.
Use of renewable energy (Kilowatt-hours, BTUs, etc.)	
Photovoltaics	The park used 17,975 kWh of renewable energy generated from our grid-tied and off-grid photovoltaic systems in 2006.
Reduction in water consumption (gallons, acre-feet etc.)	
Potable Water	Consumptive water use has dropped by 648,000 gal/yr from 2.2 million/gal/yr to 1.55 million/gal/yr or 29.5%. Waterless urinal, low-flow devices, programmable timers, efficient equipment retrofits, and composted soil use have all contributed to reductions realized.
Waste reduction (pounds, tons, gallons, etc.)	
Containers	Recycling containers purchased for aluminum cans, newspaper, cardboards, other paper, and metals segregation from garbage. Containers are clearly labeled.
Solid Waste	In 2006, the park reduced our solid waste materials entering into a landfill from 51.7 tons to 4.9 tons, or 90.5%.
Reduction in discharges/emissions (pounds, tons, gallons, etc.)	
Carbon dioxide	Renewable energy use has reduced carbon emissions from 10.25 metric tons to 3.07 metric tons or 30% in 2006.
Carbon dioxide	B20 biodiesel use has reduced our carbon emissions by 16% in 2006.
Sulfur dioxide and Nitrogen oxide	B20 biodiesel use has reduced our sulfur dioxide and nitrogen oxide emissions by 20% in 2006.
Particulate matter	B20 biodiesel use has reduced our particulate matter emissions by 20-40% in 2006.
Increased recycling (pounds, tons, gallons, etc.)	
Solid Waste	0.7 tons of aluminum cans and paper products recycled from solid waste stream in 2006. Composting efforts recycled 24 tons of grass clippings, 20.25 tons of leaves and 1.875 tons of wood chips.