

# Border Environment Cooperation Commission

## Expansion of the Municipal Solid Waste Landfill in Patagonia, Arizona

### 1. General Criteria

#### 1. a Project Type

The Town of Patagonia proposes to expand the existing Municipal Solid Waste Landfill Facility by building a new landfill cell with a capacity to store 54,600 cubic yards of solid waste, which will provide an estimated project life of 10 years. The proposed expansion is known as Phase 2 in the Municipal Landfill Solid Waste Facility Plan (SWFP) developed by the community.

This project is eligible for BECC/NADB participation within the project type of *Municipal Solid Waste*.

#### 1. b Project Category

The project is categorized as a *Community Environmental Infrastructure Project – Community-wide Impact* because the project addresses an environmental infrastructure need for the community by expanding the capacity of the Municipal Solid Waste Facility. The project may financially impact the community since additional Town revenues will be used to cover the debt service from a United States Department of Agriculture (USDA) Loan.

#### 1. c Project Location and Community Profile

The project will be implemented in the Town of Patagonia, which is located 15 miles north of the US-Mexico border in Santa Cruz County in southern Arizona. The Town of Patagonia is situated at an elevation of 4,044 feet in a scenic valley surrounded by the Santa Rita Mountains to the north and the Patagonia Mountains to the south. The Town was founded in 1898 and operates as a Strong Mayor form of Government. Figure 1 shows the general location of the town of Patagonia, within the state of Arizona and in relationship to the border with Mexico.



Figure 1 - Patagonia, Arizona

The landfill, proposed for improvement by this project, is located in a canyon environment approximately two miles north of SR 82 in the foothills area southeast of the Santa Rita Mountain range and approximately half a mile south and east of the Coronado National forest Boundary.

**Demographics**

According to the 2000 Census, Patagonia’s has a population of 881 people. Current growth rate is estimated in the range of 0.5% to 3 % annually. Using a very conservative approximation, the town’s current population (2007) can be estimated to be approximately of 917 people. Table 1 presents population projections to the year 2020.

**Table 1 – Town of Patagonia Population Projections**

<b>Population</b>	<b>2000 <sup>1</sup> (Inh.)</b>	<b>2005 <sup>2</sup> (Inh.)</b>	<b>2010 <sup>2</sup> (Inh.)</b>	<b>2020 <sup>2</sup> (Inh.)</b>
Total	881	908	931	978

(1) Source – 2000 US Census. (2) Source – Population Projections by City of Patagonia - 2007

Until recent years, the population remained primarily comprised of working class, low income families of Hispanic descent. However due to the natural beauty and the mild climate common in the area, the town is showing a steady shift in its demographic profile with an increasing median household income influenced by the continuous influx of more affluent residents to the area. In spite of the change in demographics and median household incomes described above, the town’s population is still comprised of 45.7% low-moderate income individuals according to statistics provided by Department of Housing and Urban Development (HUD).

**Environmental Services**

Residents of Patagonia receive typical municipal services including:

- Solid waste collection (curb-side) and disposal to 434 residential, 6 commercial, 2 school accounts,
- Drinking water treatment and distribution to 380 residential, 20 commercial, 2 school accounts, and 9 government/ not for profit accounts.
- Wastewater collection and treatment to 380 residential, 20 commercial, 2 school accounts, and 9 government/ not for profit accounts.

The town bills and collects fees for the operation and maintenance of these services. Finally, the vast majority of roadways within the city are paved and maintained on a regular basis.

1. d Legal Authority

The project sponsor is the Town of Patagonia. It has the legal basis to develop municipal infrastructure projects, raise taxes, establish fees and use general fund revenues. The Municipal Property Corporation (MPC) will be the financial vehicle to contract a loan component for this project. The MPC was formed on July 17, 1997 and approved by the Mayor and Council by the passage of Resolution No. 400. The incorporation of the MPC was pursuant to Chapter 22, Title 10 of the State of Arizona Revised Statutes. Under such statute the states confers legal authority

to the MPC to established a leasing contract with the Town whereby it will receive excise taxes and other Town's transfer to repay the loan.

The project falls within the scope of agreements targeted at improving the environment and the quality of life of border residents, that been signed by Mexico and the United States. The United States and Mexico have signed six major bilateral agreements related to air, water, land protection, and pollution control issues. These include:

- 1889 International Boundary Convention
- 1944 Water Treaty
- 1983 La Paz Agreement, or Border Environment Agreement
- 1990 Integrated Border Environmental Plan (IBEP)
- 1994 North American Free Trade Agreement (NAFTA)
- Border 2012 Program

The project complies with the spirit of all these agreements, and all of them have been considered since the onset of the project.

## 1. e Project Summary

### Project Description

The Town of Patagonia SWFP contains four phases to reach full development. The approved SWFP includes approximately 23 acres of disposal area that will be developed over the expected life of the facility, which is approximately 100 years at the current rate of disposal. The town has completed Phase 1 of the approved SWFP, which required improvement necessary to come into compliance with all the applicable Federal and State regulations. Phase 2 of the SWFP is the project proposed for certification and financing by BECC and NADB.

Phase 2 includes the development of the current four acre footprint of the existing disposal area and its expansion northward into an area referred to as the North Canyon; this development will require that an additional 14 acres of soil borrow area be developed and approximately three acres of stormwater management features be constructed. The project's design requires the mass excavation of soil from the area of the site known as Middle Ridge, construction of the north perimeter stormwater diversion channel, construction of access roads, construction of a storm water detention basin and associated appurtenances, construction of the final cover system for the basal portion of the existing disposal area, riprap erosion control lining of features where necessary, and miscellaneous engineering, surveying, geotechnical and mobilization/demobilization costs.

The disposal area has approximately 5.9 acres, with an estimated 20 percent of the area required for the daily and intermediate cover and approximately 2 acres required for the final cover. The design shows that the total gross volume of disposal is 78,000 cubic yards less the requirements for all three covers, which total 23,400 cubic yards. The result is a net disposal volume of 54,600 cubic yards.

The expansion will require that a ridge of alluvial material, known as Middle Ridge, be removed over the development of the facility. During the construction of Phase 2, approximately one-third

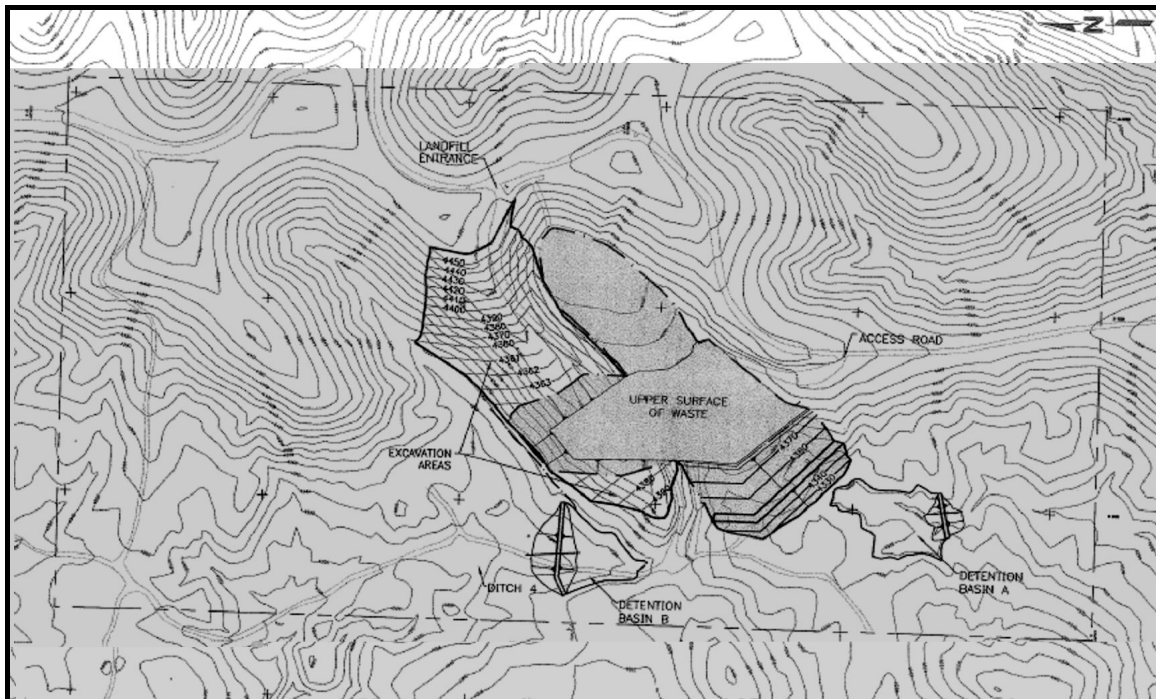
of the entire Middle Ridge will be removed and the landfill is expected to reach the final surface grades on the western side slope of the existing disposal area.

Additionally, stormwater control features will be constructed during Phase 2. The earthen material required for the construction of stormwater basin C and the closure of the basal portion of the existing disposal area will be excavated from the “Middle Ridge Area”. This will require that an additional acre of land be cleared. Furthermore, due to the Town’s current operational capacity and in order to comply with the established SWFP, the Town must close an equivalent area of the used existing disposal area while the plan expansion is underway.

The project cost of Phase 2 development and construction is estimated to be \$ 666,260.

### Project Map

The project consists of constructing a 5.9 acre disposal area (excavation areas), stormwater improvements (north perimeter storm water diversion channel and stormwater detention basin) and closure of the existing disposal area. Figure 2 shows the general layout of the disposal area within the landfill property, the existing disposal area and the proposed project area.



**Figure 2 – Phase 2 Expansion of the Town of Patagonia Municipal Solid Waste Facility.**

### Project Justification

Since the mid-1970’s, the Town of Patagonia has owned and operated a municipal solid waste landfill on an 80 acre parcel of land located approximately 1.8 miles north of the town limits. In 1998, the Arizona Department of Environmental Quality (ADEQ) issued a consent order for the landfill, which ordered the Town to close the facility or bring it into compliance with all

applicable state and federal operating regulations, including 40 CFR Part 258<sup>1</sup>. The consent order compliance issues were:

- No perimeter Stormwater controls to prevent run-on and provide run-off structures to convey Stormwater.
- No engineered storm water detention basin, overflow pipe and spillway.
- No methane monitoring system.
- No approved Solid Waste Facility Plan (SWFP)
- Inadequate daily cover

In December 2000, the SWFP was submitted for approval. The Town received administrative completeness approval but lacked the technical information (engineering). The Town submitted the required engineering requirements along with the SWFP to ADEQ for approval in October 2001.

In May 2004, the Town successfully completed the construction of the methane gas monitoring system, Stormwater basin A and the perimeter storm water channels as part of Phase 1 of the site improvements needed to operate the existing disposal areas in an environmentally responsible manner. The implementation of the improvements was supported by a federal Community Development Block Grant (CDBG) funds.

Implementing the subject Phase 2 project will allow the town to continue its efforts to provide adequate solid waste disposal services to Patagonia residents and to comply with the requirements established in the approved SWFP, including the 40 CFR Part 258 regulations. Additionally, the proposed project will mitigate environmental and human health concerns associated with improperly managed solid waste accumulation or illegal dumpsites that may derive from inaccessible disposal sites, a condition which could occur if the expansion is implemented. The project implementation will not only benefit the current population but the projected growth for the next ten years.

**Important Issues for Certification:**

The Project falls within the BECC's priority sectors and complies with General Criteria.

**Pending Issues:**

None

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<sup>1</sup> U.S. Environmental Protection Agency established the minimum national criteria for landfills by an amendment of the Resource Conservation and Recovery Act (RCRA) (Subtitle D of the RCRA, 40 CFR Part 258, Criteria for Municipal Solid Waste Landfills).

## 2. Human Health and Environment

### 2. a Compliance with Applicable Environmental Laws and Regulations

Approval of a SWFP by ADEQ is the basis for a landfill operating permit in Arizona. The Town of Patagonia's SWFP was reviewed and approved on October 11, 2001. The permit to operate a Municipal Solid Waste Facility allows the town to conduct any of the activities necessary for the operation and maintenance of the landfill; as such they are approved to implement any required actions to operate an environmentally safe facility. The permit allows the holder to initiate any of the tasks listed in the SWFP, including Phase 2, required to expand, monitor and close the facility, as long the implementation does not create significant environmentally negative impacts and does not go beyond the existing boundaries covered by the permit and established in the SWFP as the entire 80 acre site, and more particularly the 22 acre disposal area.

The environmental review record performed for the Phase 1 Improvements covered the entire developed site over the anticipated life of the facility. Thus, the environmental assessment of not just the existing disposal area but the complete landfill site has been completed. The federal process required under the Community Development Block Grant (CDBG) program guidelines for the Phase 1 improvements resulted in a "Finding of No Significant Impact" for the facility.

The MSWF requires an EPA National Pollutant Discharge Elimination System (NPDES) permit for stormwater discharges. A new Surface Water Pollution Prevention Plan (SWPPP) was prepared to address concerns such as stormwater sampling under the NPDES Multi Sector General Permit for Stormwater discharges, and best management practices for the daily operational activities of the facility. The following are the actions taken by the town of Patagonia to meet all discharge requirements associated with potential water quality degradation due to the effects of construction activities associated with Phase 2 NPDES permits (for 1-5 acre construction sites):

- The Town filed a NPDES Notice of Intent to Discharge (NOI) on January 29, 2001 for the MSWF and prepared an interim SWPPP based on the existing site conditions of the facility.
- On March 7, 2001, the EPA authorized the MSWF to discharge stormwater under the NPDES Storm Water Multi-Sector Permit.
- Since the installation of the requisite stormwater control system significantly changed the site conditions at the facility, particularly where NPDES issues are concerned, a new SWPPP was prepared for the facility on May 2003.

In addition, the U.S. Environmental Protection Agency established the minimum national criteria for landfills by an amendment of the Resource Conservation and Recovery Act (RCRA) (Subtitle D of the RCRA, 40 CFR Part 258, Criteria for Municipal Solid Waste Landfills). Subtitle D allows for a small landfill exemption from the most costly design and monitoring requirements if the state environmental authority determines that a facility:

- a. Receives less than 20 tons of solid waste per day on an annual average,
- b. There is no evidence of groundwater contamination from the facility,

- c. The landfill is located in a region with under 25 inches of annual precipitation, and
- d. There are no practical management alternatives available.

Pursuant to 40 CFR 258.1(f) (1), the ADEQ has determined that the Patagonia landfill met the criteria for the small landfill exemption; thus, design and monitoring requirements will be applied appropriately.

Finally, although not a requirement of state or federal regulations, an Environmental Report was prepared in order to meet the requirements for funding by the US Department of Agriculture Rural Development Program (USDA-RD). The results of the formal environmental consultations conducted for this project are presented below in the Formal Environmental Clearance Section in table 3, titled List of Environmental Clearance Consultations.

All applicable environmental laws and regulations have been addressed for the proposed project.

## 2. b Human Health and Environmental Impacts

### Human Health Impacts

The project's main purpose is to dispose the municipal solid waste without creating a nuisance or hazard to public health, safety and the environment. The expansion and corresponding improvements would prevent the illegal disposal of solid waste in creeks, canyons and the desert and as a result protect the environment and protect human health by averting direct contact with decaying matter.

Inadequate management of municipal solid waste can create conditions that may proliferate disease vectors that could increase the risk for diseases such as: leptospirosis, Hantavirus pulmonary syndrome, murine typhus, bubonic plague, rabies, vesicular rickettsiosis, and Haverhill fever, among others. Moreover, the inadequate disposal of solid waste could be a source of air pollution, soil contamination, and surface and groundwater contamination. The implementation of the project will contribute to reduce or avoid the risk of disease to human health and the negative impacts to the environment that area associated with the inadequate management of solid waste. The following are the morbidity records for the Santa Cruz County provided by the Arizona Department of Health Services. The list includes those infectious diseases that could be caused by direct human contact with improperly disposed solid waste.

**Table 2 – Morbidity Records for the most common diseases related to improper waste disposal in the County of Santa Cruz.**

Illness	Year					
	2001	2002	2003	2004	2005	2006
Salmonella Infections	0	0	0	0	0	0
Shigellosis and Amebiasis	0	0	0	0	0	0
Other Intestinal Infections	0	0	1	0	1	0
Septicemia	2	4	6	6	6	0
Other unspecified infectious and parasitic diseases	2	1	1	0	1	1
<b>Total</b>	<b>4</b>	<b>5</b>	<b>8</b>	<b>6</b>	<b>8</b>	<b>1</b>

Source: Arizona Department of Health

The development of this project will improve public health conditions, as follows:

- (1) Human health conditions will be improved by reducing or eliminating disease vectors associated with improperly disposed solid waste.
- (2) Reduced potential for increased air pollution, soil contamination, and surface and underground water contamination.

#### Environmental Impacts

The project's objective is to improve the environmental conditions by executing the improvements and expansion required for the Patagonia MSWF. It is anticipated that the expansion of the MSWF will not affect the environment surrounding the existing perimeter and does not exceed the current permit boundaries. The landfill, which sits in the middle of foothill ridges and ravines normally associated with this kind of terrain, is also located outside of the Federal Emergency Management Agency (FEMA) 100 year flood plain map. Impacts created during the implementation of the project would be temporary and a pollution control program would be implemented to control and mitigate the impacts produced.

The project's construction anticipates direct environmental impacts associated with excavation and construction site improvements. Mitigation of adverse environmental effects includes the following:

- Salvaging of the native plants in the areas to be cleared, thereby reducing erosion and fugitive dust.
- Dust will be controlled by irrigating roads and construction areas during daily activities.
- Generation of construction scrap material is anticipated to be minimal and would be disposed on site.
- Noise generation will be kept to a minimum; the remote location of the landfill property prevents noise from reaching clusters of population.
- Excess excavated materials will be stockpiled on site for future use as daily cover for disposal operations.
- Excess water or rain would be diverted to storm ditches and collected in the existing storm basin where the sediment will settle prior to its disposal. The spillway will slowly dewater the basin to provide adequate time for sediment removal.
- The work area will be cleaned periodically to avoid contamination and to control dispersion of waste around the construction area.
- If it is necessary to extract any material or perform any other activity from an area outside of the project, this location will be restored when the project is finished to avoid erosion and drainage changes, as well as restore the overlying native plant species cover.

Regarding the protection of surface water bodies and watercourses; the consulting firm for the design of Phase 2, SCS Engineers, performed two site reconnaissance's and concluded that there was no evidence of impoundment of water or springs within the MSWF property. The surface water produced by storm events would be controlled, as stated in the SWFP (Volume 2), by capturing the run-on and run-off and directing them to catch basins. Potential surface water quality degradation due to the effects of construction activities and associated Phase 2 NPDES permits (1-5 acre construction sites) are addressed concurrently with the Phase 2 construction engineering which include construction plans, specifications and bid documents. Furthermore, best management practices are addressed and will be implemented concurrently with Phase 2 construction engineering activities.



The MSWF operations manual and specifications also include mitigation activities to be applied during daily operation, closure and post closure activities. Among them is the salvage of native plants to be use throughout the re-vegetation of the site during the planned phased closure activities, and the maintenance of the vegetative layer of the final cover system during post-closure monitoring of the site. Both activities will help to retain the final cover system soils, thereby reducing erosion and the inclusion of sediment in the stormwater discharges. Once the site reaches its projected design life all efforts would be aimed at restoring the site to its original state.

#### Transboundary Impacts

The projects implementation and operation does not anticipate any significant Transboundary impacts.

#### Formal Environmental Clearance

As mentioned previously, the project does not require an Environmental Assessment; however, an Environmental Report was prepared in order to meet the requirements for funding as established by the USDA-RD. The Environmental Report for Phase 2 was prepared by the Town of Patagonia in October 2006. The report prepared complies with at least the minimum environmental requirements as required by the MSWF for expansion of the current facility.

Several formal consultations for the project were completed and have been documented. The town requested a Class III Archeological Survey of the 80 acres in October 1992. The purpose of the survey was to assess and record new and previously recorded archeological sites within and adjacent to the proposed project area. As part of the survey, a records search was conducted. The record search did not produce any previously recorded historic or prehistoric archeological sites located within or adjacent to the proposed area for the landfill expansion. Furthermore, the survey did not find any cultural or historical remains or resources, other than isolated artifacts, within the project area that required further analysis. Also, no new archeological sites were located; however, any sites which may be found during the implementation of the project will be respected and will not be disturbed until they are evaluated by the State Historic Preservation Office (SHPO).

The Town of Patagonia received clearance to continue with the activities related to the development of the MSWF by the following agencies:

**Table 3 - List of Environmental Clearance Consultations**

<b>Environmental Area/ Statutes</b>	<b>Agency/Group or Tribe</b>	<b>Date</b>	<b>Supporting Documentation</b>
Historic Preservation	State Historic Preservation Office (SHPO)	October/December 1992	Class III Archeological Survey
Relevant Tribes	Zuni Heritage & Historic Preservation. Hopi Tribe.	February 2001	Response/Concurrence Letter.
Flood Plain Management	County Flood Control District	August 1999	Response/Concurrence Letter. Summary of Discharge & Flood Ins. Study Map
Wetlands Protection	U.S. Army Corps of Engineers	March 2001	Jurisdictional Delineation Map
Sole Source Aquifers/	Arizona Department of		Response/Concurrence
Endangered Species & Protected Plans	U.S. Fish & Wildlife Arizona Game & Fish	January 2000	Response/Concurrence Letter/List of Species.
Air Quality Protection	Arizona Department of Environmental Quality	December 2000	TOP SWFP Volume 1. Section 3.10
Wild & Scenic Rivers	County Flood Control District	August 1999	Response/Concurrence Letter. Summary of Discharge & Flood Ins. Study Map
Vegetation & Wildlife	Arizona Game & Fish U.S. Dept. of Interior Army Corps of	February 2001	Response Letters for No Adverse Impact Anticipated & Notice of Intent to Clear Land

**Important Issues for Certification:**

The project resolves a significant human health and environmental problem.

**Pending Issues:**

None

## 3. Technical Feasibility

### 3. a Technical Aspects

#### Project Development Requirements

The Final Design for the Phase 2 of the Patagonia Municipal Solid Waste Landfill Facility Plan was prepared by SCS Engineers, the same firm that produced the Solid Waste Facility Plan and the design for the Phase 1 improvements. The project design specifications are the result of the analysis of the proposed expansion area conducted in development of the SWFP and incorporate best practices of the industry. As mentioned previously, ADEQ has determined that the Patagonia MSWF meets the criteria for the small landfill exemption offered by RCRA, 40 CFR Part 258, Criteria for Municipal Solid Waste Landfills; thus, reasonable design requirements have been implemented accordingly. The proposed expansion design criteria do not require many of the common technologies that have become standard in the landfill construction industry (liners, leachate collection systems, etc.). The Project complies with the design regulations as established by U.S. Environmental Protection Agency's Technical Guidance Document "Quality Assurance and Quality Control for Waste Containment Facilities" and with the testing requirements of the ASTM (American Society of Testing Materials).

The proposed project disposal area has approximately 5.9 acres, with an estimated 20 percent of the area required for the daily and intermediate cover and approximately 2 acres required for the final cover. Based on the estimated total volume of waste capacity of the MSWF from present to Phase 2 implementation, and accounting for increases in waste disposal tonnages commensurate with population growth over the landfill operational period, the facility useful life can be estimated. The following are the key assumptions used for the evaluation of site life:

- Waste Capacity: 54,600 cubic yards
- Waste Compaction: 800 lbs/cubic yard
- Disposal Rate: 10 tons/day
- Disposal Frequency: 3 days/week
- Population Growth Rate: 0.5% (2001-2050)

Based on the assumptions above and according to the design calculations, the life expectancy for the Phase 2 landfill cell is approximately 10 years. Final Design has been review and approved by NADB, USDA-RD, ADEQ and BECC.

#### Appropriate Technology

The proposed technology is typical in the municipal solid waste industry and is the same as used in the previous cell design (Phase 1). Because the community has already gained experience in operating the current MSWF, it is anticipated that the technology and design of the proposed project is appropriate for sustainable operations by the Town of Patagonia. The project alternatives reviewed consisted basically of the following scenarios:

- a) **No-action Alternative.** In view of the environmental, human health, social, and political implications, this alternative was not considered to have merit since the proposed project is required as a planned element of the SWFP approved for regulatory compliance

matters and necessary to provide adequate solid waste disposal services to the residents of Patagonia.

- b) **Identify alternative disposal sites for solid waste generated in Patagonia.** This alternative was reviewed and rejected; the ability to access alternative sites for disposal is not feasible. The nearest solid waste facility, other than the existing, available to the Town of Patagonia is the Rio Rico Landfill located 42 miles northwest of the Town. A smaller facility, the Sonoita-Elgin landfill, located in the eastern part of the county at approximately 17 miles from the town, is now converted into a transfer station; both are operated by the Santa Cruz County Authority and neither have capacity sufficient to receive the solid waste generated in Patagonia beyond the short-term needs.
- c) **Implement Phase 2 of the SWFP.** This alternative is considered to be the preferred alternative. The improvements described in the ADEQ-approved SWFP are necessary to maintain regulatory compliance at the MSWF.

#### Land Acquisition and Right-of-way Requirements

Patagonia began its landfill operations on this parcel in the 1970's. During the late 1970's the Town of Patagonia enter into a lease agreement with the Arizona State Land Department and began disposal of solid waste at the site. On October 14, 1987, the Town purchased the property from the State for the sum of \$ 1,200,000 and absolved the Land Department from any responsibility created by the materials dispose at the site. In 2005, the solid waste fund borrowed the water and sewer enterprise fund to pay off the loan from the State.

#### Work Tasks and Schedule

The Town of Patagonia proposes to complete the Project, Phase 2 Construction and the partial closure of the existing disposal area in a period of ten years. A detail Task Schedule (Phase 2 Staging Plan) was developed with the final design. Under this plan the development of Phase 2 would be broken into three major stages. The first two stages are known as the intermediate stages and the third as the final (future development) stage. The town will seek qualified contractors to implement each of the stages through their procurement process. Landfill development, including expansion of waste disposal area, stormwater control structures and environmental monitoring systems, will occur in a planned and sequential manner over the life of the landfill. The following table shows the projected dates for each of the construction stages:

**Table 4 – Phase 2 Construction Development Schedule.**

Task	Year					
	2007	2008	2009	2010	2015	2017
Construction of Phase 2 Stage I of the Landfill (Initial Excavation of Middle Ridge)						
Construction of Phase 2 Stage I of the Landfill (Construction of Stormwater Control Improvements)						
Closure of Current Disposal Area (Phase 1)						
Construction of Phase2 Stage II of the Landfill (Conclusion of Excavation of Middle Ridge)						
Construction of Phase 2 Stage III of the Landfill (Final Surface Grading of Project Area)						
Initiate Closure of Phase 2 Disposal Area *						

\* **Note:** This activity is not included in the current project.

### 3. b Management and Operation

#### Project Management

The operation and maintenance of the MSWF including the proposed improvements will be the responsibility of the Town of Patagonia, under supervision of Solid Waste Department staff. The scope and size of the improvements are common to a municipal solid waste project. These consist of excavation and construction of simple concrete structures. There are no extraordinary construction requirements anticipated. The project sponsor is committed to complying with all

solid waste within the town limits. The solid waste system operates with one coordinator and three assistants. Budgeting, billing, cash collection, accounting and payments to suppliers are prepared by the Town's staff. These services are expensed as overhead to the Solid Waste Fund. There is no additional staff or training requirements needed as a result of the project.

### ***Operations and Maintenance***

Routine operation and maintenance activities already established in the day-to-day operations of the MSWLF and collection services will continue to be applied during and after the completing construction of the proposed project. Currently, the operations can be described as follows:

The collection of refuse is conducted by means of a 14 cubic yard compacting waste collection truck. The Town provides service to 434 residential sites, six commercial accounts and two schools. Collection from residences and businesses is done at curb side. The waste is manually loaded into the compacting truck by Solid Waste Department personnel and then delivered to the MSWLF for disposal. Furthermore, several 55 gallon metal drums are placed in public places, such as parks, for disposal of trash.

In addition, the Town's de-watered waste water sludge is disposed of at the MSWLF; currently the Waste Water Treatment Plan produces approximately 50 tons of biosolids per year.

The Town diverts white goods and metal products from the waste stream at the landfill, additionally the County of Santa Cruz provides a recycling trailer for glass, plastic, tin, aluminum and newsprint; also a 10 cubic yard container for disposal of cardboard is provided. The Town of Patagonia does not handle or dispose hazardous waste. The landfill personnel screen the incoming loads and refuse any liquid or hazardous waste. Such products are directed to the county's hazardous waste disposal at the Rio Rico County Landfill.

Operations at the landfill are conducted daily using a Caterpillar 953 Track Loader. No other equipment at the landfill site is available. As per the SWFP a minimum of six inches of cover must be applied daily at the end of operations. The method of filling utilized at the MSWLF is classified as a combination trench and area method, but can be better described as a "canyon fill" operation. At the end of the day a cell cover must be provided, the results of the "Soil Borrow Source Evaluation" indicate that the soils present at the site have the material properties that are considered suitable for daily and intermediate disposal area cover, and likely for final cover system construction needs. The soil required for the daily cover operations is the product of the previous excavation made to prepare a new disposal cell. The excavated soil is stockpiled nearby to minimize transport vehicle travel distance. A minimum of six inches of compacted soil cover is placed each operating day as part of the filling and compacting process. Any operating areas not to be used for more than 30 days require the placement of an intermediate cover with a minimum of one foot of compacted soil.

The Operation and Maintenance Plan for the MSWLF, included in the approved Municipal Solid Waste Facility Plan, has been provided to BECC.

***Permits, licenses, and other regulatory requirements***

Approval of the SWFP by ADEQ is the basis for a landfill-operating permit in Arizona. The SWFP received approval from ADEQ on October 11, 2001, and the landfill currently operates under Approval No. 50028400.00. In addition, the MSWF operates under the requirements of an NPDES permit issued by EPA for stormwater discharge, for which compliance is further supported by the SWPPP prepared to guide sampling requirement and other pollution prevention measures.

**Important Issues for Certification:**

Final Design was reviewed by the USDA, ADEQ, BECC and NADB.

**Pending Issues:**

None

## 4. Financial Feasibility and Project Management

### 4. a Financial Feasibility

The North American Development Bank (NADB) reviewed the financial information presented by the Project's Sponsor and, based on it, determined that the financial and structural capacity proposed by the Town of Patagonia, AZ is adequate. The information presented and the financial analysis includes, among other items:

1. Economic and demographic information of the area of the project,
2. Historic Financial Statements of the Town, included all Enterprise funds;
3. Proposed financial structure of the project;
4. Investment budget, and
5. Budget for operation and maintenance,

The detailed analysis of the financial information of the project can be found in the NADB's SWEP proposal to be presented to NADB/BECC Board's for consideration. The following is a summary of the financial analysis.

The total cost of the Project is estimated to be \$666,260.00 at the expected time of construction. This figure covers soil excavation, construction of diversion channels and storm water control structures, construction management and contingencies. It also includes a cost adjustment to account for the estimated time elapsed between the funding request and construction.

The NADB is considering support for this program through its Solid Waste Environmental Program (SWEP). According to this financial feasibility analysis, the NADB will submit for the Board's consideration a direct grant of \$333,130.00 dollars from the SWEP. The securing of another funding component by Patagonia in an amount sufficient to cover the total cost of the project will be required by the NADB previously to the disbursement of the SWEP grant.

In addition to the SWEP grant, Patagonia is requesting a loan from the United States Department of Agriculture (USDA). The table below presents the breakdown of the total Project costs, as well as the sources of funds.

**ESTIMATED PROJECT COST AND SOURCES OF FUNDS**  
(Dollars)

Uses	Amount	%
Construction Assistance	578,989.00	87
Construction Management	60,481.00	9
Contingency (5% on CA)	26,790.00	4
<b>TOTAL</b>	<b>666,260.00</b>	<b>100</b>
Sources	Amount	%
USDA/Patagonia's General Fund*	333,130.00	50
NADB SWEP	333,130.00	50
<b>TOTAL</b>	<b>666,260.00</b>	<b>100</b>



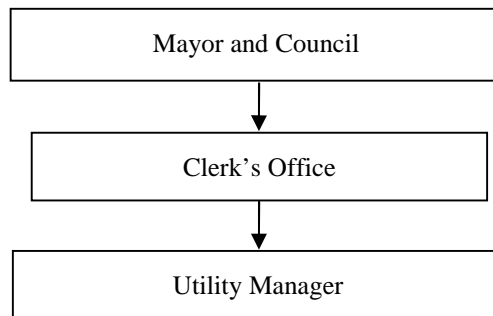
#### 4. b Rate/Fee Model

The current and historical O&M costs were reviewed and were deemed appropriate. The financial budget projections show that Patagonia is able to cover the operation and maintenance expenses (O&M) of its Solid Waste system. This project will not bring additional O&M expenses to the fund. However, the implied debt service obligations and other reserve obligations are expected to require from Patagonia the generation of additional revenues either through its Solid Waste Fund or other revenue sources.

#### 4. c Project Management

The project is managed by the Town of Patagonia through its Solid Waste Enterprise Fund. The Town has adequate personnel to manage the proposed infrastructure and the capacity to solve any potential emergency in relation to the operation and maintenance of the works.

The following is the organizational chart for the operation of the project:



**Important Issues for Certification:**

The project was analyzed and determined to be viable.

**Pending Issues:**

None

## 5. Public Participation

### Comprehensive Public Participation Plan

The Comprehensive Community Participation Plan (CCPP) developed by the Steering Committee was approved by BECC on March 14, 2007. This program includes a strategy for public outreach regarding the tasks proposed for certification, the benefits that these tasks will provide to the community, the environmental aspects considered, project costs and financial information regarding the required rate structure. In addition, the program includes information that will be distributed through mass media, as well as a program for meetings with various sectors of the community, such as professional organizations, the academic sector, and grassroots associations. By implementing the public participation process, the majority of the community will have an opportunity to access information about the project and the benefits it intends to provide for the population at large. Following is a summary of the activities carried out to implement the public participation process for this project.

### Local Steering Committee

The Steering Committee first met on December 9, 2004 to discuss the public participation process for the proposed landfill expansion and all proposed activities were postponed until the NADB Funding Committee's approval of the SWEP grant. The NADB Funding Committee approved the use of SWEP funds in March, 2007, at which time the Project's Public Participation efforts were reinitiated. The Steering Committee was re-mobilized and met on March 14, 2007 for an update on the project status and to finalize the Public Participation Plan.

The Steering Committee was established on March 14, 2007 for the proposed expansion of the Municipal Solid Waste Facility in Patagonia, Arizona. The following list of community members served on the Steering Committee:

<b>Name</b>	<b>Representation</b>
Gary Gay	Patagonia Mayor
Randy H01 413.198.417 Tm 1	

and community members who work Monday through Friday were therefore able to access the project information after regular business hours at this location.

The following project information was available for public review at least 30 days prior to and at the public hearings:

- Preliminary Engineering Report, Town of Patagonia Municipal Solid Waste Landfill, November 2006, prepared by Randy Heiss, Town Clerk/Treasurer
- Environmental Report for Phase 2 Development of the Town of Patagonia MSWLF, October 2006, prepared by Randy Heiss, Town Clerk/Treasurer\*
- Town of Patagonia Landfill Solid Waste Facility Plan, Volume 1, December 2000, prepared by Randy Heiss, Compliance Manager
- Town of Patagonia Landfill Solid Waste Facility Plan, Volume 2, December 2000, prepared by SCS Engineers
- Phase 2 Construction Engineering Design Report, Patagonia Landfill, May 2004, prepared by SCS Engineers
- Town of Patagonia Solid Waste Utility Financial Analysis, June 2005, prepared by Economists.com.
- Bilingual fact sheets that include basic technical, environmental, financial and public participation components of the project \*

This information was made available at the Patagonia Public Library along with a notice that all project information was available for public inspection during regular hours at Town Hall.

### **Public Notice**

Public notices announcing the public meetings were published in the local and regional newspapers at least 30 days prior to the date of the meeting. The public notices included the date, time, location and purpose of the meetings. Furthermore, public notices were also posted in public and common meeting areas. All advertisements were done in accordance with the requirements of the BECC's Public Participation criteria.

### **Additional Outreach Activities**

The steering committee developed meetings with various professional, grassroots, and non-governmental organizations with local representation. Individual committee members were designated to contact various local organizations to present them with project information, attend meetings of the organizations to solicit public support, and to invite them to express their views regarding the project at the required public hearings.

Local organizations that were contacted include: the Patagonia Volunteer Fire Department, Patagonia Public School Districts, Patagonia Area Business Association, Senior Citizens of Patagonia, Patagonia Regional Community Foundation, Patagonia Youth and Family Services Coalition, Native Seed Search, Patagonia Community Garden, Mesa Property Owners Association, and The Nature Conservancy. Representatives from the Patagonia Volunteer Fire Department, La Semilla, the Patagonia Area Business Association, and Senior Citizens of Patagonia attended at least one of the two public meetings that were held.

## **Public Meetings**

### **First Public Meeting**

The first meeting was held on April 25, 2007 at the Town Hall in Patagonia, Arizona with approximately 20 people attending. Exit surveys taken at the public meeting demonstrated 100% support of the project as well as an understanding of the need and benefits of the project.

### **Second Public Meeting**

The second public meeting was held on May 9, 2007 at the same place, in Patagonia, Arizona. With about 12 participants, the financial aspects of the project were presented including the financial structure and the applicable rate schedule. Exit surveys at this meeting demonstrated 100% support the financial aspects of the project

### **Final Public Participation Report**

The Final Public Participation Report was delivered to BECC with the supporting documentation that shows the extent and fulfillment of the public participation objectives and public support for the project as outlined in the BECC certification requirements.

### **Post-Certification Public Participation Efforts**

The project sponsor will provide regular updates on the project's activities in its council meetings and in periodic contributions to the local newspaper. The community will continue to receive updates concerning the status of the solid waste facility and activities about the progress of the project through these means. In addition, the project sponsor is interested in providing information to the community related to recycling and other waste reduction practices.

### **Important Issues for Certification:**

There is documented overwhelming community support for the project.

### **Pending Issues:**

None

## 6. Sustainable Development

### 6. a Institutional and Human Capacity Building

The project will strengthen the institutional capacity for the Town of Patagonia by increasing its capability to provide solid waste collection and disposal service, including:

- Its efforts to institute a fee structure which supports the self-sufficiency of the project and by instituting a fee structure which guarantees the self-sufficiency of the project.
- The financial state of the project sponsor will not be negatively affected the project due to the grant support for implementing the project anticipated from the North America Development Bank (NADB).
- Certification and project development provide access to loan resources, if required for project implementation. This credit can potentially serve to improve the town's debt capability, an important consideration which will help maintain a favorable credit score to satisfy future infrastructure needs.

The project will be operated by the Solid Waste Department, which possesses the required personnel for operating and maintaining the project. Furthermore, the Solid Waste Department has a facility plan approved by the ADEQ to operate the landfill as well as a training program to instruct the employees in the proper operation and maintenance of the facility.

### 6. b Conformance with Applicable Local, State, and Regional Laws and Regulations and Conservation and Development Plans

The project complies with the ADEQ-approved SWFP, which establishes goals pertaining to the enlargement and improvement of the MSWF infrastructure by increasing the capacity of the landfill to match present and future growth at least until the year 2017. In addition, the Santa Cruz County Urban Development Department supports the enlargement of the existing facility for the Town of Patagonia, especially with the knowledge that the existing regional facilities are nearing their design capacity. The County and the Town of Patagonia support the development and implementation of a Regional Facilities Plan, in order to reinforce the need and access to basic services considering sustainable development opportunities for the region.

The project is related to the Border 2012 Environmental Program, achieving Goal # 3 (Reducing land contamination), & Objective # 2 (promoting strategies to improve management capacity of solid wastes). One of the guiding principles of this program is to decrease major risks to public health, and to preserve and restore nature.

### 6. c Natural Resource Conservation

The purpose of the project is to improve the disposal of municipal solid waste produced by the Town of Patagonia and surrounding unincorporated communities and at the same time benefit the health of the population of the border region, without deteriorating the environment. The project does not interfere with the conservation of natural resources of the region as it will be carried out in a presently disturbed area using existing urban roadways to access it. Moreover, it will not

require land use changes because the area was previously designated to be used as an approved solid waste disposal landfill.

#### 6. d Community Development

This project will promote community development by reducing the incidence of illnesses associated with inadequate or illegal disposal of municipal solid waste in the region. Therefore we foresee a benefit to the community by impeding the increase of disease and reducing the pollution, and as a result improving the quality of life of the population. Likewise the development of municipal infrastructure promotes economic development that as a result increases the surplus value of the residents' properties.

**Important Issues for Certification:**

The project complies with all sustainable development principles.

**Pending Issues:**

None

**Available Project Documentation**

- Preliminary Engineering Report, Town of Patagonia Municipal Solid Waste Landfill, November 2006, prepared by Randy Heiss, Town Clerk/Treasurer.
- Environmental Report for Phase 2 Development of the Town of Patagonia MSWLF, October 2006, prepared by Randy Heiss, Town Clerk/Treasurer.
- Town of Patagonia Landfill Solid Waste Facility Plan, Volume 1, December 2000, prepared by Randy Heiss, Compliance Manager.
- Town of Patagonia Landfill Solid Waste Facility Plan, Volume 2, December 2000, prepared by SCS Engineers.
- Phase 2 Construction Engineering Design Report, Patagonia Landfill, May 2004, prepared by SCS Engineers.
- Town of Patagonia Solid Waste Utility Financial Analysis, June 2005, prepared by Economists.com.
- Bilingual fact sheets that will include basic technical, environmental, financial and public participation components of the project, Marchw 0.