

Introduction

Little Singer Community School (LSCS) is a pre-school and K-6th grade elementary school located in Birdsprings, AZ. This site assessment report has been prepared for the proposed Little Singer Community School (LSCS) as part of the Planning Phase Documentation prepared by Eaton Architecture per Bureau of Indian Affairs (BIA) and Bureau of Indian Education (BIE) requirements. The new school will be developed on the existing school campus. To accommodate the new school a majority of the existing school will be demolished. This assessment for this report addresses existing conditions, including floodplain, geotechnical report, site characteristics, utility and traffic infrastructure. The purpose of this report is to assess the existing infrastructure and provide recommendations for the new school.

Majority of the information included in this assessment was obtained by various agencies throughout the Navajo Nation, which included various departments for utilities and roadways. These agencies include the Navajo Tribal Utility Authority (NTUA), Navajo Nation Water Management Department, Indian Health Services, Little Singer Community School Facilities Department, Bureau of Indian Affairs (BIA), Bureau of Indian Education (BIE), and Navajo Nation Environmental Protection Agency. Data collection from other governmental sources include United State Geological Survey (USGS) mapping and United State Department of Agriculture (USDA) Web Soil Survey were used for the proposed site.

The collected data was analyzed along with supplemental telephone conferences and site visits were utilized in evaluation of existing and proposed infrastructure for Little Singer Community School. Telephone calls and meetings with LSCS, BIA, and NTUA was beneficial to developed several options to bring utilities to the site. Construction cost estimates from NTUA were obtained for proposed utility extension options to the site.

Floodplain

Morrison Maierle, Inc. prepared a Navajo Water Resource Evaluation Flood Plain Study in June of 1977 for the Navajo Nation Water Management Department. The study was conducted to determine 100 year flood hazard areas on Navajo Reservation and delineated an approximate 100 year floodplain map using the reconnaissance method. As part of the Bureau of Indian Affairs (BIA) design requirements, the proposed school shall be located outside the 100 year and 500 year floodplain. The mapping obtained from the above referenced study approximately represents the 100 floodplain within the southwest and northwest portions of the site. Refer to Floodplain Maps, for the 100 year floodplain delineation in respects to the Little Singer Community School site. The study did not delineate the 500 year floodplain. Based on the close proximity of the 100 year floodplain delineation we can confidently assume that the proposed project site would encroach into the 500 year floodplain. It has been stated by BIA, that Little Singer Community School can request a waiver for the 500 year floodplain requirements. It is recommended that the approximate 100 year floodplain study be performed during the design phase of this project.

Geotechnical Report

The Geo-tech Report was prepared by ATEK Associates of Chandler, AZ based on a field exploration on April 19, 2013. A geotechnical subsurface exploration was performed to develop information relative to the existing subsurface soils testing and to provide recommendations for design of foundations, paved parking, streets, landscaping and other structures in the project. Exploration of the existing subsurface conditions included drilling 6 soil borings to a depth of approximately 20 feet below the existing ground surface to determine information relative to subsurface soil conditions. Boring samples were taken at strategic locations across the 30 acre site as selected by the Architect. The locations were selected to give a general and average representation of the site. Percolation tests were taken at two locations on the site to determine the permeability of the site soil. Please refer to Geotechnical Report, for the subsurface evaluation and recommendations.

Site Characteristics

Aerial Topography Survey

The Aerial topographic map of the school was completed by Aero-Graphics of Salt Lake City, Utah. The Aerial control panel points were set by Extreme Measures on March 18, 2013 and the flight was conducted on March 19, 2013. The aerial topographic survey has created with one foot (1') contour intervals within the school site.

The school site is sparsely covered with native shrubs and some existing trees loosely scattered around the school buildings. Existing overhead electric is located east and diagonally (entering from northeast corner) of the site. The area encompassed by the existing school site gently slopes toward the north and is situated on an existing ridgeline bisecting the north and south portion of the site.

Onsite elevations vary from a high point of approximately 4,785 along the east side of the property boundary to an elevation of 4,771 along the southern boundary and 4,775 along northwest boundary. Onsite slopes generally range from about 1% along the ridgeline and up to 60% on the south side of the natural ridgeline. Please refer to Boundary Topographic Survey Map.

Boundary Survey

A survey was conducted by Extreme Measures Land Surveys, LLC on April 7, 2013. The surveyor located the property boundary corners and developed the legal description for Little Singer Community School. In coordination with Aero-Graphics, an Aerial topographic map of the site was developed. The survey concludes: Little Singer Community School is situated on the South half Section 3 and the North half of Section 10 of Township 21 North, Range 15 East of the Gila and Salt River Base and Meridian in the vicinity of Birdsprings on the Navajo Nation in Navajo County, Arizona. A Bureau Land Management (BLM) monument cap dated 2005, is located at NW corner of Section 3 was found and used as the point of beginning for the legal description. The existing school site encompasses approximately 30 acres.

Soils/Drainage

According to a Web Soil Survey from United States Department of Agriculture, the onsite soil is comprised of the Moffat-Monue complex. Moffat-Monue soil is described as loamy fine sand and more coarse sand in depth (see Soil Map). This soil type belongs to the Hydrologic Soil Group B, which means the soil absorbs/infiltrates well. Since the soil type falls into the Hydrologic Soil Group B, low impact development (LID) measures should be adequate for onsite runoff mitigation. The proposed school will be located on the existing ridgeline bisecting the north and south portions of the site. Drainage under proposed conditions can be directed to the northwest and southwest portions of the site. These locations will be ideal for retention or detention ponds as required for stormwater management. The school site and the surrounding areas eventually discharge into the Little Colorado River located south-southwest of the property.

INFRASTRUCTURE-UTILITIES

Water Facilities

Water Utility Provider

Water is currently provided and maintained by:

Navajo Tribal Utility Authority (NTUA)
Dilkon District Office
HC 63 Box D
Winslow, AZ 86047
Phone: 1-800-528-5011
Contact: Toney Nez

Existing Water System

The school is tied to the existing community water system named Leupp Community Water System (PWS ID#NN0403033). This system is currently serving the communities of Leupp, Black Falls, Tolani Lake, and Birdsprings. According to NTUA's 2011 Consumer Confidence Report (CCR), the Leupp (NN0403033) water system had 553 active service connections, which included residential and businesses for an estimated population of 2,046 NTUA drinking water customers. There are an existing total of three (3) ground water sources (05T-505, 05T-547, and 05T-510) all located in the Leupp, AZ vicinity, currently two (2) wells are operating (05T-505 and 05T-547). The other well (05T-510) is not operating due to low production. Water is pumped from these wells, treated with chlorine and fluoride, and tested to Safe Drinking Water Standards, as stated in the NTUA CCR. Once treated, water is then pumped to each community's respective storage tanks by two (2) booster stations located in Tolani Lake and Birdsprings. The storage tanks are located within 1 to 25 miles away from the well sites. The whole system consists of a total of nine (9) storage tanks throughout the local communities and distributed by gravity to each respective community. Existing water system pipes consist of Polyvinyl Chloride (PVC) material and vary in size from 4-8 inches mains and individual service lines ranging from 2-4 inches.

Birdsprings Community and Little Singer Community School (LSCS) are serviced by a total of four (4) tanks; the tanks are located east of Birdsprings Navajo Housing Authority (NHA) complex. Table 1.1 shows existing tank information.

Table 1.1 Existing Storage Tanks Serving Birdsprings Community

Tank Name	Diameter (Feet)	Height (Feet)	Capacity (Gallons)
Birdsprings Tank 1 (North)	20	44	100,000
Birdsprings Tank 2 (South)	20	44	100,000
Ives Mesa Tank 1	16	40	60,000
Ives Mesa Tank 2	32	8	45,000

Water is received from Leupp wells and stored in the two (2) Birdsprings tanks. Water is then pumped by a booster station located near the Birdsprings tanks further east to the two (2) Ives Mesa tanks. A total tank capacity of 305,000 gallons is then distributed by gravity to residential and commercial buildings including Little Singer Community School by a 6" PVC water main. The 6" PVC water main currently crosses the LSCS campus, entering from the northeast and exiting on the southwestern part of the campus. The distribution system extends southwest of the site to service consumers south and southwest of the school.

Existing Water System Conditions

Little Singer Community School appears to use 2" and 4" PVC service lines that provide water to multiple buildings on the school campus. Currently there are two (2) fire hydrants located on school campus. There is an existing pressure reducing valve (PRV) located on the school campus and upstream of LSCS, according to the provided Indian Health Service water system map. PRV3 (2"x3/4" size) is located off of school campus (east of the school), approximately a half mile upstream and has a pressure of 170 psi coming in and a pressure out of 60 psi leaving. The PRV located on campus is east of classroom 105. Based on the fire hydrant flow test the residual pressure was 18 psi, but could be adjusted by upstream PRV3 to meet adequate pressures, refer to Fire Hydrant Flow Test Results. Due to having a PRV3 located upstream (off campus), flows to the school are restricted and an accurate fire flow pressure could not be determined. Based on the information, domestic pressures and domestic flows are adequate enough for the proposed school. NTUA has stated they can provide water for fire protection, but they do not guarantee fire flow or suppression. The fire hydrant flow test will need to be conducted again, without any PRV restrictions upstream, to determine and verify if the school has adequate fire pressures.

Proposed Water Utilities

The new school can be serviced by the existing 6" PVC water main runs through diagonally through the existing Little Singer Community School. The new school may conflict with the existing water main. The water main will need to be realigned around the new facility to provide access to NTUA for maintenance and to provide services for the additional remaining school buildings. Additional Right of Way (ROW) is not anticipated since the water main will be relocated within the boundaries of the school property. It is anticipated that the water line would loop around the new campus buildings to maintain services and system pressures. Service lines to the new building will be tied into the new water main loop. The new water main size will be based on projected water and fire flow demand. NTUA has also mentioned the PRV3 (2"x3/4" size) located upstream (east of school property) be relocated downstream of proposed new school, to allow unrestricted pressures to the school and possibly provide enough pressure for fire pressure.

Per BIA design requirements and NTUA recommendations, an adequate, dedicated on site supply of water for fire suppression may be required. This can be accomplished with an on surface storage tank or an in-line underground tank approximately sized for 5,000 to 10,000 gallons with electric pumps and an electrical generator backup. NTUA requires that all fire lines, tanks and pumps have suitable backflow protection for all possible cross connections. Any required fire hydrants to be maintained by NTUA shall be placed upstream of the service meters. The hydrants shall also be located upstream of a PRV to prevent chokes in the line. Any existing fire hydrants that are in good condition can be salvaged for cost considerations.

Construction water could be provided by NTUA, if there is additional water capacity to supply. Navajo Nation Water Code Department may provide other non NTUA construction water sources, which will require a permit to use as construction water source.

Design Water Criteria

All water utilities should be designed by the most stringent design criteria among the following entities;

- Navajo Tribal Utility Authority (NTUA)
- Indian Health Service Design Standards (Accepted details/specs used on NTUA systems)
- Bureau of Indian Affairs School Facilities Design Handbook
- Navajo Nation Environmental Protection Agency Water Regulations.

All proposed water designs will have to receive water construction permits through Navajo Nation Environmental Protection Agency. NTUA requires a "Permission to Tap" application to establish any new water lines. Fire suppression design must adhere to:

- Bureau of Indian Affairs School Facilities Design Handbook
- NTUA Backflow Prevention Standards

Wastewater Facilities

Wastewater Utility Provider

Currently Little Singer Community School (LSCS) has hired the following company to pump and haul existing septic tank sewage away:

H&R Septic Service, LLC
 5630 E. Railhead Ave
 Flagstaff, AZ 86004
 Phone: 928-526-0206

Existing Wastewater System

Wastewater treatment for the school currently consists of multiple septic and drain field systems. According to plans provided by Little Singer Community School and surveyor’s field survey, the multiple systems are located along the south, east and northwest sides of the school. Exact tank sizes, number of septic tanks (existing & abandoned), and sizes of the drain fields could not be determined from the limited information gathered. Only general information could be obtained on existing wastewater facilities. There appears to be a total of five (5) septic tanks and drain fields located on the school compound. Table 1.2 shows information gathered on the existing wastewater septic tanks.

Table 1.2 Existing Septic Tank Information

Tank Number	Location	Buildings Connected To Septic Tank
Septic Tank 1&6 (verification)	South of Kitchen and Bathrooms (Bldg#103)	Classroom (Bldg#106), Kitchen, and Bathrooms (Bldg#103)
Septic Tank 2	South of Office (Bldg#104)	Office (Bldg#104)
Septic Tank 3	Southwest of Building#108	Building 108
Septic Tank 4	West of Maintenance Building	Maintenance Building
Septic Tank 5	Northwest of Dome Gym (Bldg#113)	Dome Gym (Bldg#113)
Septic Tank 7	Between Dome Gym (Bldg#113) and Wellness Center	Wellness Center (verification required)

Existing Wastewater System Conditions

The current system seems to be operating adequately according to Little Singer Community School. No previous septic tank failures have been recorded by LSCS and the existing system appears to be meeting the existing demands. The septic tanks are maintained and pumped when they are full, which is approximately on a six (6) month interval basis. The age of each system varies, depending on when each building was built. There are no engineers on file for who designed and sized the existing septic tanks, so existing tank sizes and leach line lengths are unclear. The existing septic systems that serve the dome gym and maintenance building will remain since they are both owned by the State of Arizona.

Proposed Wastewater Facilities

The following are all possible options based on commonly constructed systems for the region. All options are summarized in Table 1.3 and further describe below.

- **Option 1-Septic Tank:** Based on preliminary wastewater demands, the proposed school can anticipate a new commercial septic tank size of approximately 9,000 gallon with an estimated a drain field absorption area of 10,000 square feet. These estimates are preliminary and should be verified during the design phase.

Percolation tests from the geotechnical evaluation determined infiltration rates of 37 min/in and 115 min/in. The lower was used in estimating the above mentioned absorption area. Refer to the geotechnical report for percolation test locations. During design phase, percolation test should be verified for septic system design. Septic systems are considered to be fairly odorless, but would require regularly scheduled pumping and inspection.

Individual residential septic tanks ranging from 1,000-1,500 gallons can be used for proposed staff housing, each having their own septic tank. These separate tanks may utilize a common leech field.

- **Option 2-Tie into Existing Lagoon:** This option proposes to discharge the school wastewater to an existing nearby NHA Birdsprings Lagoon system. The existing lagoon is maintained and operated by NTUA. The lagoon system is located west of the Birdsprings Navajo Housing Authority (NHA) complex and Birdsprings Chapter House. The following are to be considered with this option:
 1. The existing lagoon is approximately located (5) to six (6) miles from the school and at a higher elevation, requiring a lift station(s) and low pressure sewer mains.
 2. Capacity of this lagoon will need to be verified during the design phase.
 3. Additional ROW may be required for lines beyond LSCS boundaries.
 4. Power to the lift station(s) will be required.
 5. Lift stations will require regular inspection and maintenance.

- **Option 3-New Hybrid Septic Tank with Holding Cell:** This option consists of a hybrid combination of septic tank and lagoon holding cell. The waste from the new school would be discharged to the septic tank, with the effluent discharging to the lagoon holding cell for evaporation. The holding cell may cause an odor if not properly maintained and both the holding cell and septic tanks may need to be pumped regularly. This option is ideal for soils not suitable for drain field absorption or if there is not enough land for the required drain field size.

- **Option 4-New Treatment Lagoon:** This option consists of a new lagoon treatment system near the school campus, which may require additional land acquisition. An onsite lagoon system does not meet the minimum 1000 feet separation requirement from the school to the lagoon. The maintenance for this lagoon is considered to be minimal compared to septic tanks. It may require staff to obtain wastewater operator certification and training. The treatment lagoon can cause odors if not properly maintained or designed correctly. This option should have no capacity issues (if designed correctly) and can be sized for future school expansion. The frequency of sludge removal is minimal (approximately every 1-2 years). The lagoon may need to be regulated by Navajo Nation Environmental Protection Agency Wastewater Program for compliance.

Table 1.3 Proposed Sewer System Options

	Sewage Disposal Type	Pros	Cons
Option 1	Commercial Septic Tank	<ul style="list-style-type: none"> • Minimal odors • No additional land required or ROW approvals 	<ul style="list-style-type: none"> • Frequent Sludge removal and hauling depending on usage and demand
Option 2	Tie into Existing Lagoon	<ul style="list-style-type: none"> • No maintenance required on behalf of school, if NTUA agrees to take over new lines and pumps. • No sludge hauling cost • No odors • Surrounding community could tie into lagoon for possible cost sharing 	<ul style="list-style-type: none"> • ROW requirements Required • May require lift stations • Lagoon capacity needs to be verified at tie in, may need to expand existing lagoon. • Power to lift stations required
Option 3	Hybrid Commercial Septic Tank With Holding Cell	<ul style="list-style-type: none"> • Useful when land is not available for leach lines or soils are not suitable for absorption 	<ul style="list-style-type: none"> • May cause mild odors • Continuous maintenance required for plant removal and up keep of holding cells • Frequent sludge removal and hauling of septic tank depending on usage and demand
Option 4	Treatment Lagoon	<ul style="list-style-type: none"> • No capacity issues • Allows for expansion • Sludge hauling removal is minimal • Minimal maintenance required • May allow neighboring customers to tie to the system for cost sharing. 	<ul style="list-style-type: none"> • Odors may occur if not properly maintained • Additional land may be required to meet 1,000 ft. set back requirement. • Training and Wastewater Operator Certification required to maintain • May need to be regulated by Navajo Nation Environmental Protection Agency, which may require additional future requirements

Wastewater Design Criteria

All wastewater utilities should be designed utilizing the most stringent design criteria among the following agencies:

- Navajo Tribal Utility Authority
- Bureau of Indian Affairs Facilities Design Handbook
- Navajo Nation Environmental Protection Agency Wastewater Regulations
- Indian Health Service Design Standards (Accepted details/specs used on NTUA systems)

All proposed wastewater designs will require construction permits through Navajo Nation Environmental Protection Agency before construction can commence.

Power Utilities

Power Utility Provider

Electricity is currently provided and maintained by:

Navajo Tribal Utility Authority (NTUA)
Fort Defiance District
P.O. Box 170
Ft. Defiance, AZ 86504-0170
Phone: 928-729-4695
Contact: Cheyenne Hollow Horn

Existing Power System

Little Singer Community School (LSCS) uses a combination of NTUA overhead power lines with alternative energy sources of both solar and wind energy to produce electricity for the school. The alternative energy system consists of one (1) wind turbine and two (2) solar panels, which the school owns and maintains. The solar/wind energy currently provides electricity to the dome gym building #113, library, classroom 102, building #108, and maintenance Building. LSCS does not currently receive credit for putting electricity back into the NTUA grid, but they do receive a lower electric bill every month.

NTUA power to the school is all single phase. Three phase power is available near Leupp several miles away and will have to be brought to the site as a part of this project. The main NTUA power line enters the site east of the school and crosses diagonally through campus. **The main school buildings are served by a 600 amp panel located at Building 66666 and a 400 amp panel at the existing kitchen facility.** Electricity is then distributed by three (3) transformer panels, located east of the kitchen, north-east corner of the library and west of classroom 101A. From the panel boxes, underground lines are distributed to the various campus buildings.

Power Requirements for New Facility

As stated by NTUA, the current single phase power, as supplied by the existing overhead lines, would not be sufficient for the proposed school. The new facility will not function properly on single phase power due to the new mechanical and kitchen equipment load requirements. Bringing three phase power to the site would be ideal and beneficial for the school and future expansions. **Estimates of electrical load requirements are as follows with estimated amperage:**

- Main buildings 1000 amps
- Kitchen Equipment 99999999 amps

The electrical load would be in the neighborhood of 330 KW. For a 208V 3-phase service the main panel size would be 1000 amps.

Proposed Power Utilities

The following two options propose extending three (3) phase power lines to LSCS:

- **Option 1-Extending Off Route AZ-99:** This option proposes extending the three (3) phase overhead line located along AZ-99 eastward to LSCS. The extension would require 7 miles of new three (3) phase line and about 6.5 miles of upgrading existing single phase line to three (3) phase power. Refer to Proposed 3-Phase Project Map. This proposed extension would require right of way (ROW) for 7 miles of new line, which would require minimum of one (1) year to obtain through the Navajo Nation SAS process. Refer to the Proposed Option 1 Electrical Cost Estimate for NTUA's estimated cost for construction. This estimate

does not reflect ROW cost. NTUA has stated that ROW costs are \$10,500 per mile. The following estimated cost includes ROW costs for 13.5 miles.

Estimated Cost \$1,904,175.00 (includes ROW costs)

- ***Option 2-Upgrade Existing Along Indian Route 15:*** This option proposes an alternative route to bring (3) phase power to LSCS. This option will require upgraded the existing 20 mile single phase power line located along Indian Route 15 and then to the site along Indian Route 71. Refer to Proposed 3-Phase Project Map. The current right of way (ROW) is only for single phase construction, therefore NTUA has stated new ROW would need to be obtained for the proposed 20 mile (3) phase upgrade project. This will require the minimum of (1) year to obtain ROW approval through the Navajo Nation SAS process. Refer to the Proposed Option 2 Electrical Cost Estimate for construction and ROW costs.

Estimated Cost \$2,507,400.00 (includes ROW costs)

Once three (3) phase power is extended to the campus, NTUA recommends using three (3) to five (5) transformers to service the following facilities:

- Main school building
- Maintenance building
- Facility building.
- Fire protection pumps (if needed as per final design requirements)
- A backup generator is to be a part of the project design and may require its own transformer.

From the new overhead 3 phase power line, underground distribution can be extended to the building within the campus. Transformers may be mounted on grade but must be protected from dust infiltration.

Alternative energy sources, such as wind/solar electricity for commercial use are not currently operated or maintained by NTUA. The LSCS will be responsible for the design, construction, and maintenance of any alternative power sources if desired and installed. NTUA has mentioned they could provide meters to determine any credit when additional electricity is added back into NTUA's power grid.

Power Design Criteria

NTUA electrical design standards and requirements will need to be followed for the proposed electrical utilities. The design standards state easement widths, separation requirements, and other pertain design information. All other codes and requirements such as, Bureau of Indian Affairs School Facilities Design Handbook, National Electrical code shall be adhered to.

Propane/Gas Utilities

Propane Utility Provider

The current bulk propane/gas provider for Little Singer Community School is:

AmeriGas
7911 U.S. 89
Flagstaff, AZ 86004
Phone: 928-526-1888

Existing Propane System

Little Singer Community School is currently using propane/gas tanks located on school grounds. The supplier is located in Flagstaff, AZ and hauls propane/gas to the school to refill multiple tanks every month. There are total of five (5) tanks, each 1,000 gallons, they are located throughout the school campus. Table 1.4 shows gathered propane/gas information.

Table 1.4 Existing Propane Tank Information

Tanks Number	Tanks Size	Location	Buildings Tanks Service
Cluster of Three Tanks (Propane/Gas Tanks 1, 2, and 3)	1,000 Gallons Each	South of Kitchen	Kitchen, Office (Bldg#104), Classrooms (bldg#106 and 102), Building# 108, Building 101A and 101B.
Propane/Gas Tank 4	1,000 Gallons	West of Maintenance Building	Maintenance Building
Propane/Gas Tank 5	1,000 Gallons	Southwest of Dome Gym	Dome Gym (bldg#113) and Library

Existing Propane/Gas System Conditions

Per LSCS, the existing system currently has no reported issues. A total of five (5) tanks are available on site, each having a capacity of one thousand (1,000) gallons each. The existing cost to refill all tanks once a month ranges from \$2,500.00-\$4,000.00 per month depending on the season, the total cost for school year 2012 was \$35,874.00, according to data provided by LSCS.

Proposed Propane/Gas Utilities

The following are proposed options to provide propane/gas utilities services to the proposed Little Singer Community School:

- ***Option 1-Propane Tanks:*** The existing propane system appears to be in reasonably good shape and can be augmented as/if needed. The existing tanks may require new paint and new walls constructed around them. LSCS may buy propane/gas in bulk and store them on school campus with additional propane tanks. This would require a propane/gas provider to refill the tanks often. The estimated cost for supplemental tanks is based on usage and demand.
- ***Option 2-Natural Gas Line:*** This option proposed by NTUA would consist of extending a new natural gas main to the proposed school from an existing Trans Western natural gas line located approximately five (5) miles north of LSCS along Indian Route 15. The extension would require about 5 miles of 4” P.E. pipe and 60 psi pressurized line. A larger gas main would need to be evaluated if surrounding customers are also to be serviced. Refer to the Proposed Natural Gas line Extension Layout. It is recommended that each proposed teacher housing have a meter as well as a meter at each building. Existing plumbing for buildings to remain can be reused but will require state certified testing for adequacy. Right of Way (ROW) and Permission to Tap Application will be required for this option requiring a six (6) month to one (1) year process. NTUA has provided a proposed cost estimate and is based on a preliminary school demand of 2,940,000 BTU connected gas load. The provided Proposed Natural Gas Line Extension Cost Estimate includes construction cost, right of way (ROW) cost, and distribution cost. Possible cost sharing is an option between Birdsprings Navajo Housing Authority and Birdsprings chapter.

Estimated Cost \$686,993.12 (includes ROW costs)

Propane/Gas Design Criteria

All proposed propane/gas line extensions would need to follow NTUA's design standards, as well as any design standards required by Trans Western Natural Gas Company. All design standards will also need to satisfy any requirements stated in the Bureau of Indian Affairs Facilities Design Handbook.

Telephone Communications/Information Technology

Telephone/Internet Utility Provider

Little Singer Community School Currently Uses the following providers for internet and phone services.

Frontier Communications
State Highway 264
St. Michaels, AZ 86511
Phone: 1-800-871-5581

Existing Telephone/Internet System

Currently the school receives telephone and internet through Frontier Communications through microwave radio receivers. The receivers are located on the eastside of the existing library building. From the receivers a T1 broadband line and phone line is used to provide internet service to various buildings on campus. The microwave radio receivers use a point to point transmission with radios located in Leupp, AZ. The existing services provided by Frontier Communications are in working condition and has been stated to have broadband speeds of 5 mb. According to Little Singer Community School, a new contract has been established with Wecom to provide internet service to the school for the next three years, starting in June 2013. Wecom will be able to provide broadband services of 50 mb through microwave radio receivers. It is anticipated that this service will be used for the proposed school.

INFRASTRUCTURE-TRANSPORTATION

Existing Roads and Conditions

Indian Route 15 and Indian Route 71 are the major roads that provide road access to Little Singer Community School. Both roads are owned and maintained by Bureau of Indian Affairs (BIA). Indian Route 15 is a paved two-way one-lane major arterial road that runs east-west. Communities north of the school use this route to get to the school. Indian Route 71 is a dirt/gravel rural major collector road that runs north-south off of Indian Route 15 and Indian Route 2. Indian Route 71 is located approximately one hundred feet (100 ft.) east of Little Singer Community School, providing access to communities north and south of the school. The rural dirt/gravel road (Indian Route 71) is passible majority of the time, however when snow or rain occurs the roads tend to get muddy and make it difficult to get to the school.

Proposed Roads

The Bureau of Indian Affairs Western Agency Division of Transportation is planning to extend N71 to N15. The project is known as Project No.N71 (3)2&3-Birdsprings to N15 & Little Singer Access Road Alignment Project. The project is in the preliminary design stages and is currently in the BIA five year program plans to be constructed. The project details include paving and realigning Indian Route 71 to Indian Route 15 and providing a paved designated access road from Indian Route 71 to Little Singer Community School. The proposed access road is approximately eleven hundred feet (1,100 ft.) east of the school site. Refer to Proposed Preliminary IR-71 Road and LSCS Access Alignment Exhibits, for preliminary BIA design layouts. All proposed alignments are preliminary and are subject to change.

Pavement

With anticipation of the new paved BIA driveway from the proposed N71, the new school access and parking areas are proposed to be paved. Paved driveways and parking will provide the school with safe access and pedestrian circulation during the winter and monsoon seasons. Paved driveways and parking lots will also reduce required maintenance for LSCS. Heavy and light traffic pavement sections will be provided as part of the geotechnical report during the design phase. The parking lots shall be graded to adequately drainage the parking lot to prevent any ponding areas flooding impacts to the school. Low impact development measures can be incorporated into parking lot medians or proposed retention or detention basins adjacent to the parking lot. Curb and gutter is recommended for directing runoff to drainage discharge locations. Costly underground catch basins and stormdrains are discouraged whenever possible.