

Geographic Information System (GIS) and Planning of School Facilities

GIS plays many key roles in the area of school district planning. Among its most useful functions in this capacity is its ability to map student locations, a process referred to as geocoding.

Public School Facilities Authority (PSFA) finds the GIS tool very helpful when providing information to the PSCOC and working along- side of school districts. We would like to continue to use this tool as well as receive geo-coded student address information from Public Education Department. Specifically, geocoding student locations can reveal the following information:

- Where do the students live (what attendance boundary)?
- How many of them will attend a specific facility?
- What square footage does the school facility need to be?
- Which school facilities are underutilized?
- Which school facilities needs more educational space?
- Will the increase and or decrease in enrollment continue?

Geocoding student locations is useful for a school district since it shows where its students live in relation to the school they attend allowing the district to formulate strategies. Once the GIS technician enters the geocodes, he/she can map student locations for analyzing a variety of school district planning issues. For example, student geocoding can help a school district identify the total number of students living in a specific school attendance zone, how many kids from that attendance zone transfer out to another district facility, and/or the number of students entering that attendance zone from other areas. Not only does geocoding help the district understand transfer patterns with its own district but it also can help the district to determine the most appropriate capacity for a new school project.

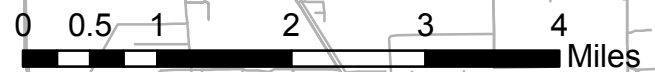
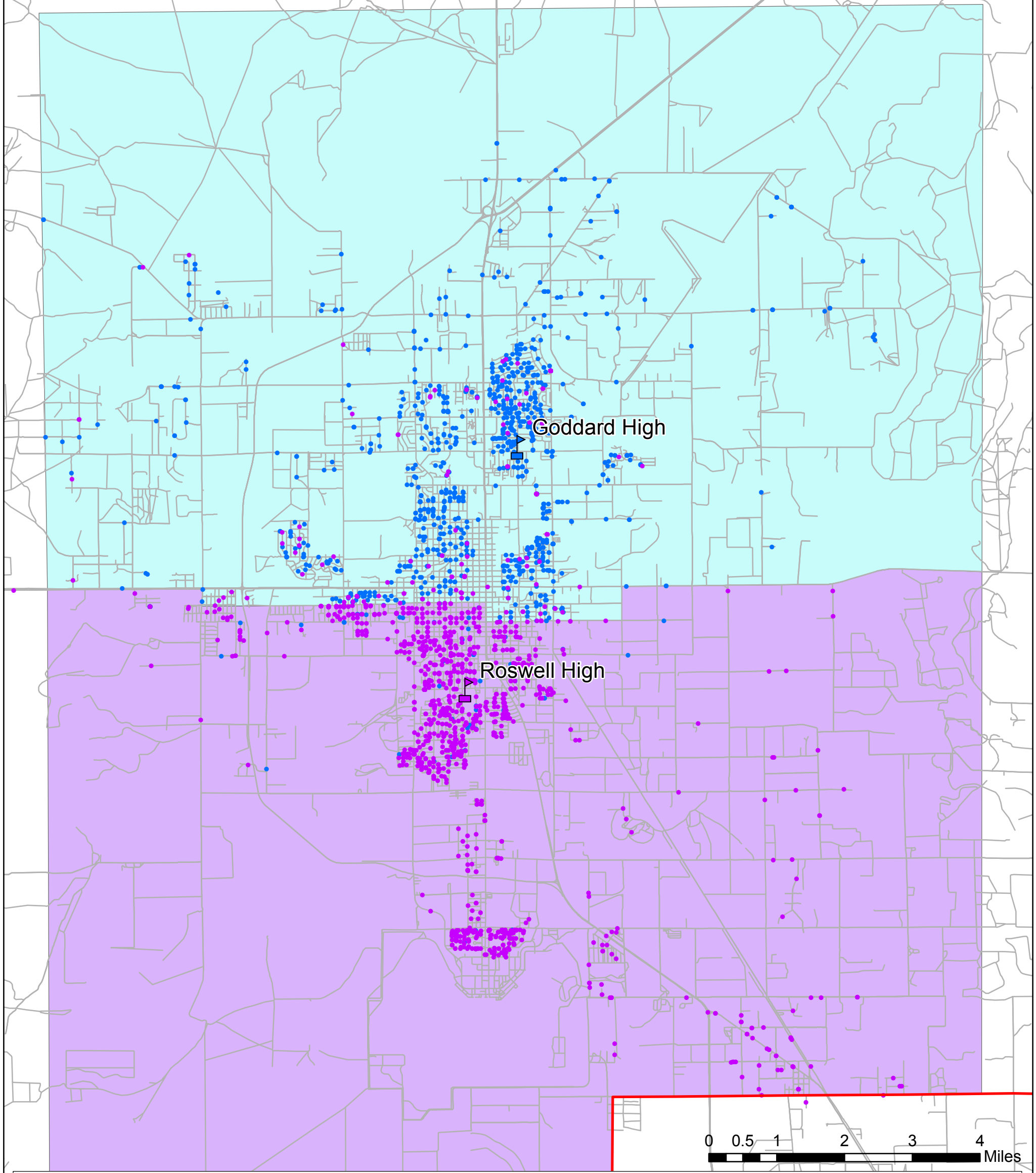
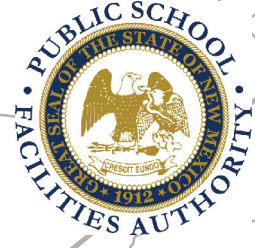
The Roswell Independent School District used geocoding for this purpose in planning and designing the Del Norte Elementary replacement project. In the 2015-16 school year, Del Norte's attendance totaled 595 students. By geocoding student locations and creating a corresponding map, the district was able to see that 560 students lived within the Del Norte Attendance zone. Some of those 560 students left the Del Norte boundaries to attend another school, while a significant number came into the boundary to attend Del Norte Elementary. As we've seen in other cases, when a district builds a new school, students living in that attendance zone who otherwise attend a school outside that zone typically come back to the new facility. The district used its geocoded information in conjunction with enrollment projections and determined that the appropriate capacity for the Del Norte project should be 576 students to serve the students living in the school's boundaries while keeping the other students in their home attendance zones leading to better utilization of those facilities.

Another example shows how a district used geocoding to identify the most appropriate location for a new elementary school. Hobbs Municipal School District's elementary schools were significantly overcapacity. Geocoding student locations along with other data such as residential building permit information and school bus routes, helped the district choose an appropriate site for the new Murray Elementary school that brings the district the most relief for its capacity situation.










In addition to these examples, geocoding student locations is useful for a variety of purposes such as:

- Understanding student migration patterns across the district – The Roswell example touched upon this point but geocoded GIS maps and corresponding data can tell a district why a certain school might be attracting students from outside attendance boundaries. Perhaps a certain school is located near a major community activity center. Students might attend that school rather than the school closer to their home to be near a parent's workplace.
- GIS can show the location of critical infrastructure such as water, sewer, and roads. This information can prove useful to a school district in choosing a site for a new school, which in turn can lead to an efficient school site that does not require tax payer funded extensions of costly extensions.
- Capacity/Utilization mapping – GIS can graphically illustrate the schools that have excess capacity allowing the district to make boundary adjustments in order to rebalance its enrollment to better utilize all of its facilities.

RISD HS Boundaries and Geocoded Students



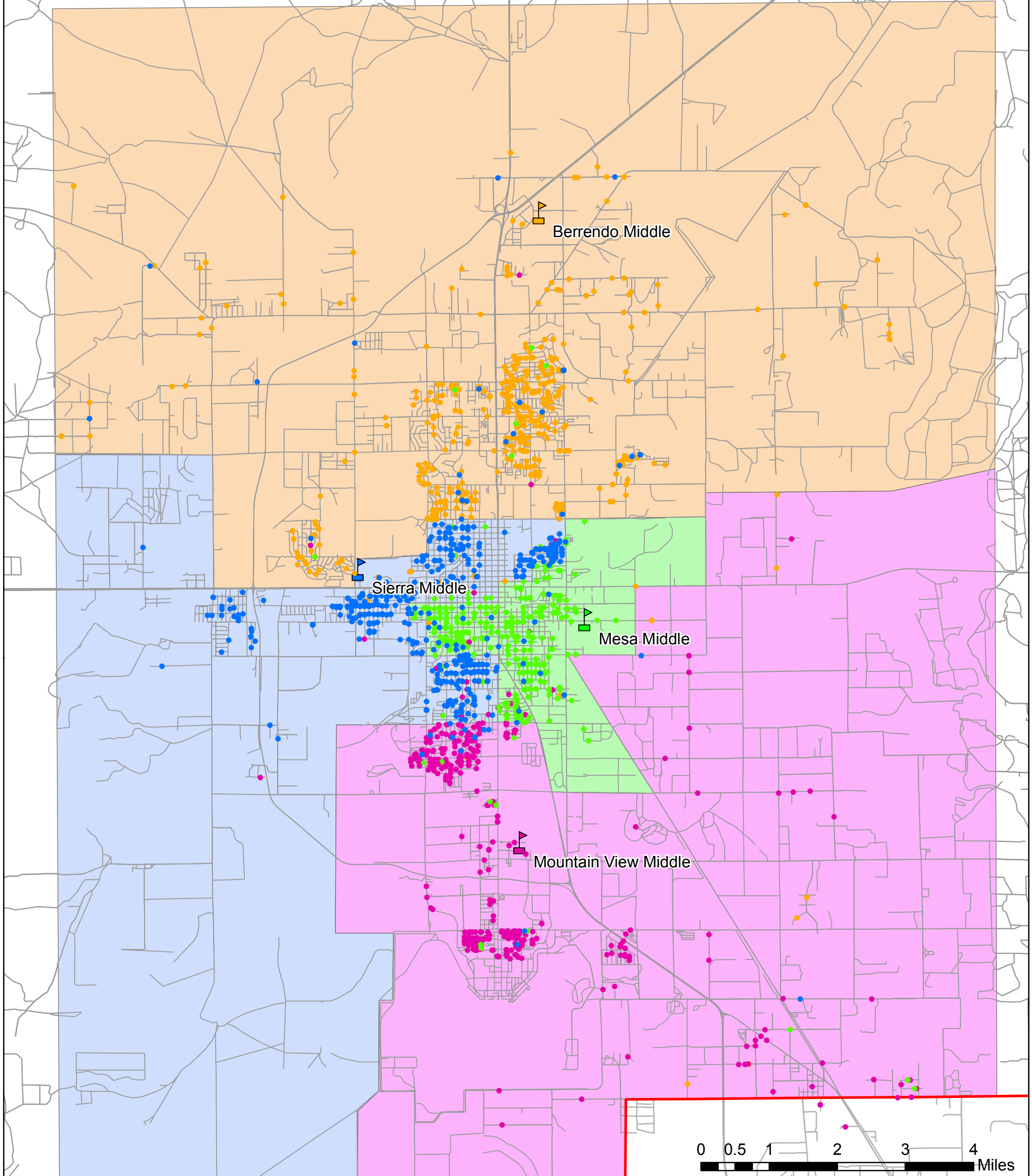
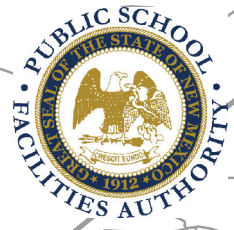
Legend

 District Boundary	Roswell HS	Student Locations	HS Attendance Boundary
 Roads	School Name	School Attended	School Name
	 Goddard	 Goddard	 Goddard
	 Roswell	 Roswell High	 Roswell

Item 5. Where Are All of the Children?

Created 1/29/16
By AM PSFA
Sources: PSFA & RISD

RISD MS Boundaries and Geocoded Students



Legend

- District Boundary
- Roads



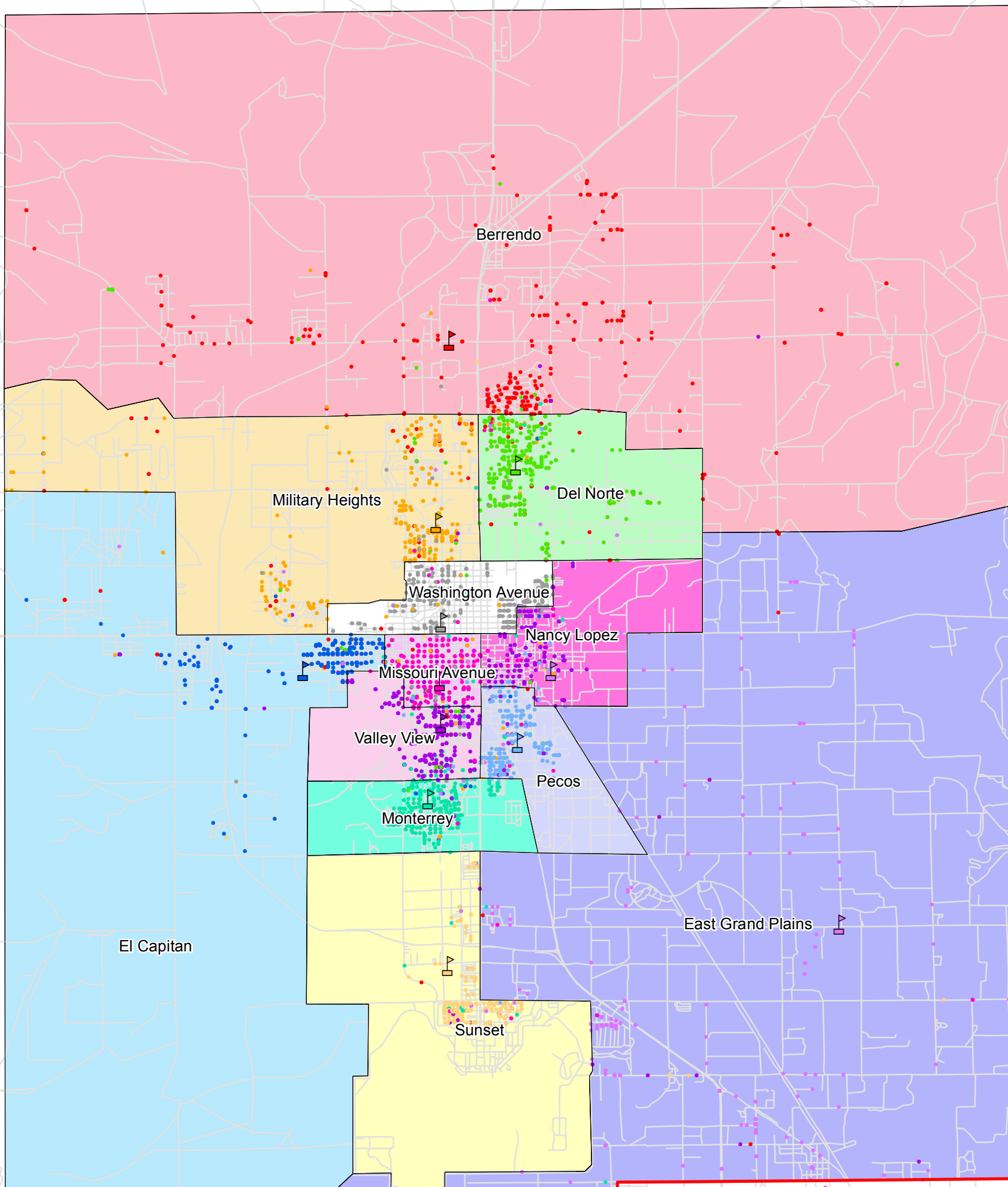
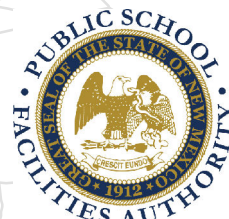
- Roswell MS School Name**
- Berrendo
 - Mesa
 - Mountain View
 - Sierra

- Student Locations School Attended**
- Berrendo
 - Mesa
 - Mountain View
 - Sierra

- MS Attendance Boundary School Name**
- Berrendo
 - Mesa
 - Mountain View
 - Sierra

Created 1/28/16
By AM PSFA
Sources: PSFA & RISD

RISD ES Boundaries and Geocoded Students



Legend

- District Boundary
- Roads



Roswell ES School Name

- Berrendo Elementary
- Del Norte Elementary
- East Grand Plains Elementary
- El Capitan Elementary
- Military Heights Elementary
- Missouri Avenue Elementary
- Monterrey Elementary
- Nancy Lopez Elementary
- Pecos Elementary
- Sunset Elementary
- Valley View Elementary
- Washington Avenue Elementary

Student Locations School Attended

- Berrendo
- Del Norte
- East Grand Plains
- El Capitan
- Military Heights
- Missouri Avenue
- Monterrey
- Nancy Lopez
- Pecos
- Sunset
- Valley View
- Washington Avenue

ES Attendance Boundary School Name

- Berrendo
- Del Norte
- East Grand Plains
- El Capitan
- Military Heights
- Missouri Avenue
- Monterrey
- Nancy Lopez
- Pecos
- Sunset
- Valley View
- Washington Avenue



Received
DFA-Local Govt. Div
APR 28 AM 7:36
BATAAN BLDG., ROOM 20
SANTO DOMINGO, NIA 07501

**MEMORANDUM OF UNDERSTANDING
BETWEEN THE PUBLIC SCHOOL FACILITIES AUTHORITY (PSFA),
THE UNIVERSITY OF NEW MEXICO
AND
THE DEPARTMENT OF FINANCE AND ADMINISTRATION**

THIS AGREEMENT is entered into, by and between the Public School Facilities Authority (PSFA), the University of New Mexico (UNM), on behalf of the Bureau of Business and Economic Research (BBER) and the Earth Data Analysis Center (EDAC), and the Department of Finance and Administration (DFA), hereinafter referred to as the “Parties”.

RECITALS

WHEREAS, the DFA Local Government Division E911 Program, pursuant to Sections 63-9D-1 etseq. NMSA 1978, administers the E911 program and is authorized to develop the addressed and edge matched statewide road centerline and available addressed structure data processed through the State E-911 Program; and

WHEREAS, Laws of 2009, Senate Bill 217, appropriated \$575,000 to PSFA to contract with BBER (PSFA’s prime contractor) and the Earth Data Analysis Center (BBER’s subcontractor) to develop a portable and secure Geographic Information System (GIS) to be used by executive and legislative agencies; and

WHEREAS, SB217 provides that PSFA “develop, in conjunction with the Public School Capital Outlay Council, the Legislative Finance Committee, the Legislative Education Study Committee, the Taxation and Revenue Department, the Department of Finance and the Administration, the Department of Information Technology and the Public Education Department, the portable and secure GIS to be used by executive and legislative agencies”; and

WHEREAS, The Public School Facilities Authority and UNM have a need for the addressed and edge matched statewide road centerline and available addressed structure data processed through the State E-911 Program to assist the State of New Mexico develop accurate public school student projections and identify student population variations; and

WHEREAS, it is mutually advantageous to share said data for the benefit of New Mexico state agencies and New Mexico state citizens;

NOW THEREFORE, in consideration of the foregoing Recitals, the Parties hereby agree as follows:

1. **Purpose of the Agreement:** The purpose of this Agreement is to facilitate the exchange of the addressed and edge matched statewide road centerline and available addressed structure data processed through the State E-911 Program.

2. Terms of Agreement:

A. DFA Local Government Division's E911 Program shall:

1. Provide to the Public School Facilities Authority and UNM on a quarterly basis the addressed and edge matched statewide road centerline and available addressed structure data processed through the State E-911 Program.
2. Require, by this Agreement, that the Public School Facilities Authority and UNM shall not provide this information to any person or entity that may use or resell the information for profit and from providing this information to any person or entity without express prior written approval of DFA.
3. Provide the Public School Facilities Authority and UNM access only to the addressed and edge matched statewide road centerline and available addressed structure data processed through the State E-911 Program.
4. Ensure that any information determined to be proprietary or confidential or protected from disclosure by law shall not be provided.

B. Public School Facilities Authority and UNM agrees they:

1. Shall access the addressed and edge matched statewide road centerline and available addressed structure data processed through the State E-911 Program through either an upload/download link, provided at the expense of the Public School Facilities Authority, or via hard media (CD, DVD) provided to the Public School Facilities Authority and UNM for no additional cost.
2. Shall not to provide this data or enhanced form of this data to any other person or entity, including state agencies or public entities, without the prior written approval of DFA.
3. Shall only enhance or format this data for its own use or purposes.
4. Shall not provide the information to public or private entities that may use or resell the information for profit.
5. Shall not have access to any information determined to be proprietary.
6. Shall comply with the provisions of Section 63-9D-11 NMSA 1978, as amended pertaining to private listing subscribers and 911 service.

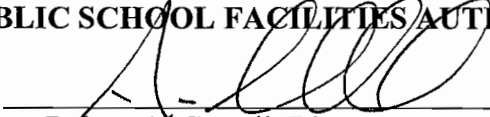
7. Shall ensure that private listing subscribers' waiver of the privacy afforded by nonlisted or nonpublished numbers is waived only to the extent that the name and address associated with the telephone number may be furnished to the enhanced 911 system for call routing or for automatic retrieval of location information in response to a call initiated to 911.
8. Shall ensure that information regarding the identity of private listing subscribers, including names, addresses, telephone numbers or other identifying information shall not be released as it is not a public record and is not available for inspection.
9. Shall ensure that proprietary information provided by a commercial mobile radio service provider or telecommunications company shall not be released as it is not public information. Such proprietary information shall not be released to any person without the express permission of the submitting provider, except that information may be released or published as aggregated data that does not identify the number of subscribers or identify enhanced 911 system costs attributable to an individual commercial mobile radio service provider or telecommunications company.
10. Shall ensure that all personnel who will have access to the information disclosed under this Agreement or to the records containing information disclosed under this Agreement will be advised of the confidential nature of the information and the civil and/or criminal sanctions contained in applicable state and federal laws for divulging the information unlawfully.
11. Shall ensure that the information will be processed in a manner, which will protect the confidentiality of the information and in such a way that unauthorized persons cannot retrieve such records by means of computer, remote terminal or any other means.
12. Shall ensure that the information generated by this Agreement will be stored in an area that is physically safe from access by unauthorized persons at all times when not in use. The information and records will be stored in areas that are physically secured to prevent access by unauthorized people.
13. All parties have or will have in place security and confidentiality requirement and policies in compliance with state and federal law concerning the handling and disclosure of the information and records that are the subject of this agreement. All parties will continue to maintain and enforce such policies and will notify the other of changes to requirements and/or policies. All persons and employees with

access to confidential material shall adhere to their entity's policies, as amended.

- C. Property:** Any property acquired under this Agreement, shall belong to the party who acquired the property. The addressed and edge matched statewide road centerline and available addressable structure data processed through the State E-911 Program shall remain the property of DFA. The parties shall determine the disposition of records generated by performance of this Agreement upon termination of this Agreement.
- D. Strict Accountability of all Receipts and Disbursements:** Each party shall be strictly accountable for all receipts and disbursements under this Agreement.
- E. Amendment:** This Agreement shall not be amended except by instrument signed and executed by all parties.
- F. Appropriations:** Performance under this Agreement is contingent upon sufficient authority and appropriations granted by the New Mexico State Legislature.
- G. Governing Law:** This Agreement shall be construed and governed by the laws of the State of New Mexico.
- H. Liability:** All parties shall be responsible for liability incurred as a result of the other party's acts or omissions in connection with this Agreement. Any liability incurred in connection with this Agreement is subject to the immunities and limitations of the News Mexico tort Claims Act, Section 41-4-1 etseq. NMSA 1978. Each party shall be solely responsible for its actions or actions of its employees and agents under this Agreement.
- I. Term and Termination:** This Agreement shall become effective upon execution by the DFA. It shall remain in effect indefinitely unless terminated by any party with ten (10) days written notice prior to the intended date of termination. By such termination, neither party may nullify obligations already incurred for performance or failure to perform prior to the date of termination. Upon termination, all future obligations under this Agreement shall terminate.

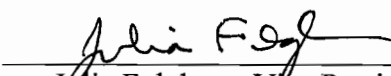
IN WITNESS WHEREOF, the parties have executed this Agreement, which becomes effective as of the date of approval by the Department of Finance and Administration.

**Public School Facilities Authority
PUBLIC SCHOOL FACILITIES AUTHORITY**

By: 
Robert A. Gorrell, Director

Date: 4/26/10

The Regents of the UNIVERSITY OF NEW MEXICO

By: 
Julia Fulghum, Vice President for Research


Date: 4/20/10

AGENCY'S COUNSEL

By: _____

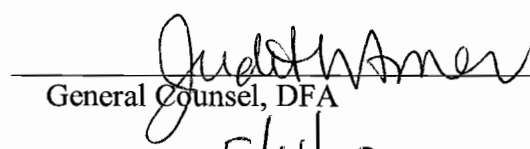
Date: _____

DEPARTMENT OF FINANCE AND ADMINISTRATION

By: 
Katherine B. Miller, Cabinet Secretary

Date: 5-4-2010

**DEPARTMENT OF FINANCE AND ADMINISTRATION/OFFICE OF
GENERAL COUNSEL**

By: 
General Counsel, DFA

Date: 5/4/10

History of Geographic Information System and PSFA

2010

Senate Bill 217 appropriated \$575,000 (PO issued 1/8/2010) to Public School Facilities Authority (PSFA) to contract with Bureau of Business and Economic Research (BBER) and Earth Data Analysis Center (EDAC) to develop a portable and secure Geographic Information System (GIS) to be used by executive and legislative agencies;

AND

PSFA develop in conjunction with Public School Capital Outlay Council (PSCOC), Legislative Finance Council (LFC), Legislative Education Study Council (LESC), Tax and Rev, Department of Finance and Administration (DFA), Department of Information Technology (DoIT) and Public Education Department (PED), the portable and secure GIS to be used by executive and legislative agencies;

AND

PSFA and University of New Mexico (UNM) have need for the addressed and edge match state wide road centerline and available address structure data process through state E911 Program to assist the State of NM develop accurate public student projections and identify student population variations;

AND

It is mutually advantageous to share said data for the benefit of NM state agencies and NM citizens.

This Bill dictated a MOU between UNM and PSFA. (BBER is a part of UNM)

2012

Final invoice received below is a summary of tasks delivered by BBER and EDAC to PSFA;

- Training materials (now in-house)
- Mapping and support (now in-house)
- Desktop modeling and analysis of geospatial layers (now in-house)
- Response to what if questions (now in-house)
- Training to two PSFA staff (now in-house)
- Two web sites (now in-house)
 - PSCOC Active Projects
 - Statewide data for PSFA Stakeholders
- Geocoded student database; Delivered with limitations due to not receiving student addresses from PED. Ten districts accounted (now in-house)
- Aggregated and non-aggregated geo-databases to update PSFA's GIS website and web based mapping system; delivered with limitations due to not receiving student addresses from PED. (now in-house)
- Individual geocoded student's records, building permits, and group quarters- not for public use as it will not meet the privacy requirements of the MOU; delivered with limitations due to not receiving student addresses from PED. (now in-house, provided we can receive the data)
- Aggregate the geocoded data sets in blocks, census tracts, and school district boundaries; delivered with limitations due to not receiving student addresses from PED. (now in-house; source US Census)
- Provide ESRI shape files to EDAC for the public Health database relevant to birth and death records.
- Detailed description report containing the student forecasting model and geocoding of individual student location point methods including the type and key parameters of the model, the software and version used, detailed listing of sources and the model variable. (now in-house)
- Population forecasting model for estimating school age population (now in-house)

- Report containing five and ten year student enrollment projections (now in-house)
- Narrative for each school district including district growth trends; delivered with limitations due to not receiving student addresses from PED. (now in-house)
- Report detailing student forecasting model methodology, include summarized 40th day enrollment of previous five years, for the district, each grade level, individual school facility and individual school by grade and projections vie year out; delivered with limitations due to not receiving student addresses from PED. (now in-house)
- “What if” scenarios.(now in-house)

2014-2015

PSFA establishes a license agreement with ESRI with an annual cost of \$1,314.06. Providing PSFA with licenses for five users and 2,500 service credits. First in-house web site map created, first on line hosting

Current Status of Geographic Information System; PSFA Website Maps

2015

PSFA GIS Map

- Audience – Parents, School Districts, PSFA Staff
- Purpose - Our one stop shop of all data in regards to school facilities.

Information Includes

- School Layer
 - Enrollment history
 - Grades served
 - address
 - ranking history
 - public or state charter
 - Square footage

- Facilities Maintenance Assessment Report history (FMAR)
- School District Layer
- FMP Status Layer
- Elementary School Attendance Boundary Layer
- Middle School Attendance Boundary Layer
- High School Attendance Boundary Layer
- NM State House of Representatives Layer
- NM Senators Layer
- Flood Hazard Layer
- County Layer

2016

Award History

- Audience – Parents, School Districts, PSCOC
- Purpose - Provide a visual representation of PSCOC award history since 2011-2012 to present and provide all information associated with the Standards Based Capital Outlay Awards.

Information Includes; by district, school and facility

PSCOC Award Language

Total Project Cost

Total Project Cost to Adequacy

Local Match

State Match

Weighted New Mexico Condition Index (wNMCI)

Ranking of the school

Facilities Condition Index (FCI)

Current FMAR

Systems Set To Expire

- Audience – School Districts

- Purpose - The purpose of this map is to highlight 3 major systems in a school facility and to determine when they will need be renewed, based on age.

Information Includes; by district, school and facility

- Roofs Set to Expire 2016-2021 Layer
- HVAC Set to Expire 2016-2021 Layer
- Lighting/Branch Circuits Set To Expire 2016-2021 Layer

2017

Portable Classroom Locations

- Audience – School Districts, PSFA Staff
- Purpose – Create a map the school districts and PSFA can use to see where portable classrooms are located for utilization and inventory purposes.

Information Includes; by district, by school and facility

- School
- Year Installed
- Ownership
- Available
- Classroom Usage
- Square Footage

Additional Services Provided

Student Location Geocoding - The process of converting addresses (like a street address) into geographic coordinates (like latitude and longitude), which you can use to place markers on a map. This service presents district with additional information when planning school facilities.

Districts that we have worked with using district provided geocodes;

- Alamogordo

- Carlsbad
- Gadsden
- Raton
- Reserve
- Gallup
- Roswell
- Clovis
- Rio Rancho

Map Creation – All maps are done in-house, in addition to PSFA specific maps, we have collaborated with other state agencies, school districts and council members in creating mapping applications suited to specific needs.

Geospatial Data Sharing – All PSFA spatial data is shared when requested excluding geocoded data.