

# **Can We Create A GIS Project That The Students Can Input Data Into?**

**Marilyn Krause and Roger Price**

**Ryan Middle School**

**GIS-GPS for Alaska Teachers**

**June 18, 2004**

# Contents

- Goal of our project
- Student's question
- Goal of the student's project
- Standards covered in project
- Data collection
- Methods used to create project
- Map of Creamer's Field with trails
- Map of vegetation and water
- Map of pH, Nitrogen, Potassium, and Phosphorus
- Conclusions
- Plans for the future of our project
- Acknowledgements

# Objectives

- **Getting a GIS project ready for the student's input**
- **Locate a geo-referenced aerial view of Creamers Field**
- **Locate sampling sites and hotlink photos**
- **Create vegetation, pH, nitrogen, potassium, and phosphorous themes of this area**
- **Create trails theme**
- **Create data storage files**

# **How Is Chemistry Related to Vegetation In The Creamers Migratory Waterfowl Refuge?**



# **Student Objectives**

- **To generate a map showing the relationship of soil chemistry and vegetation**
- **To use a GPS to find a location**
- **To collect real world soil samples**
- **To identify tree species**
- **To practice mapping skills**
- **To practice taking field notes**
- **To use ArcView**
- **To perform soil chemistry tests**
- **To organize and analyze data**

**This lesson fits into the Science Alaska Geology curriculum which requires that students learn to use GPS's and compasses. The student's collect soil samples at GPS locations, do basic soil chemistry tests, and review tree identification. The students will complete their project with the analysis of their map.**

**Science Standards: A15 Local Knowledge,  
B Science Inquiry, D Apply Scientific  
Knowledge and Skills to Reasoned Decisions**

# Lesson

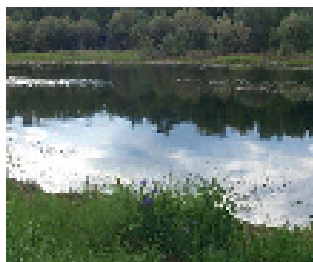
- Go collect data using the points given
- Record vegetation observations in collection area
- Do chemistry tests on soil samples
- Record data in data table
- Go into ArcView GIS and apply data
- Alter a map theme with your data
- Do analysis and write a paper on conclusions
- Discuss trees need for certain soil factors to grow

# Methods Used to Create Project

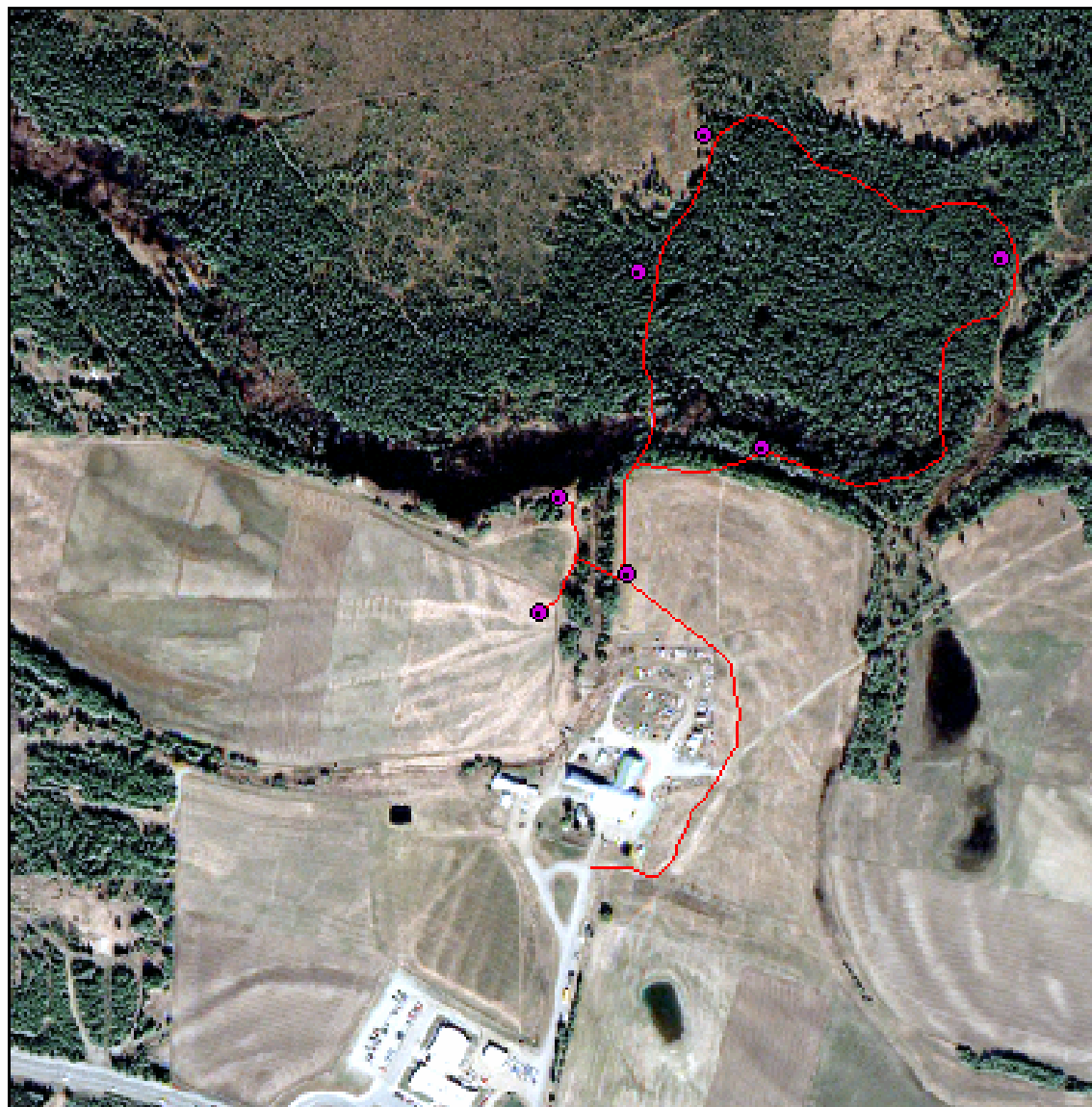
- Obtained geospatial map from the Fairbanks North Star Borough
- Added in trails and collection points
- Used reference maps to create vegetation theme
- Created a water theme
- Created themes for pH, nitrogen, potassium, and phosphorus



● Collection Points  
 Trails



0.1 0 0.1 Miles

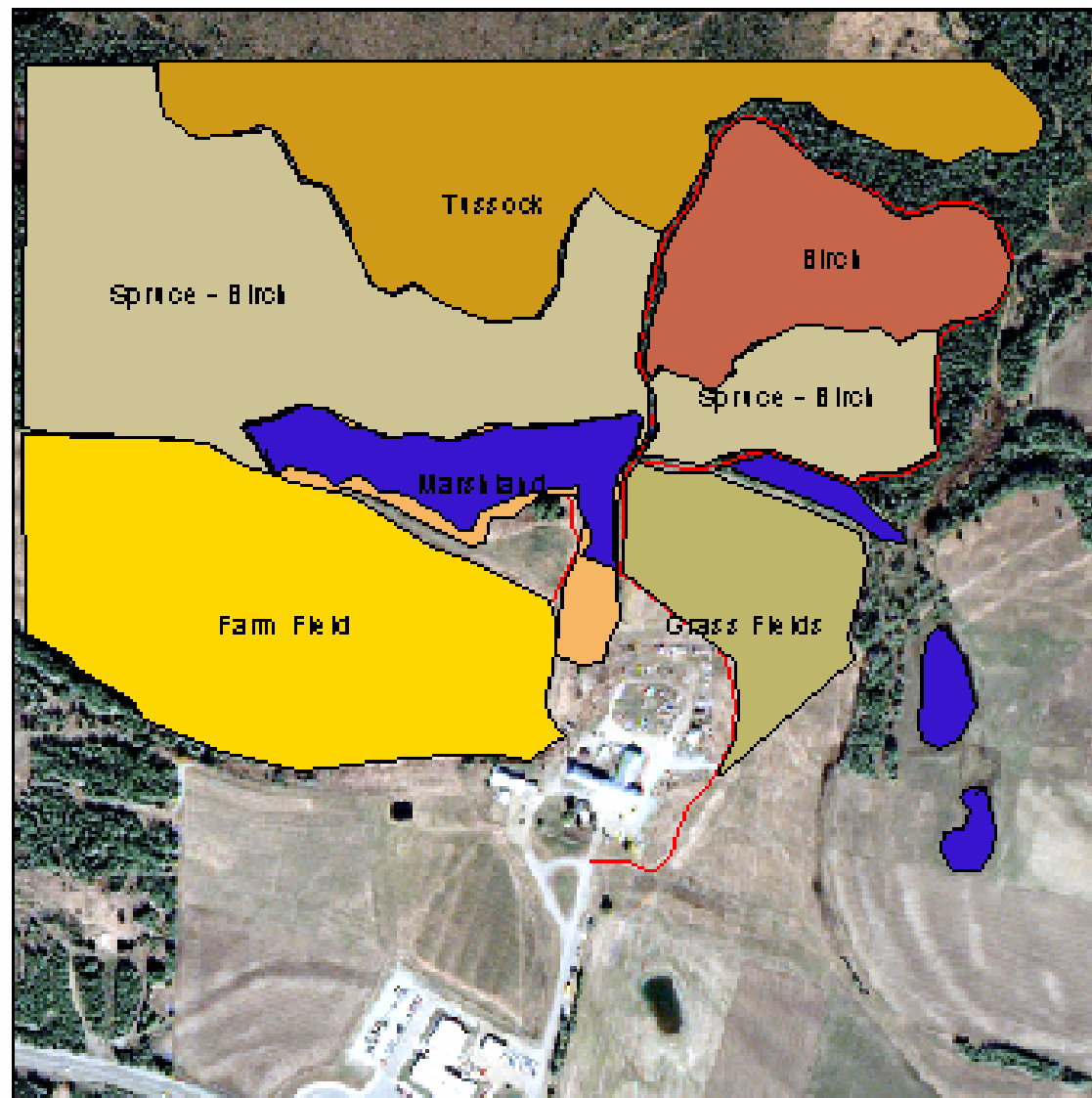


**Creamer's Field With Trails and Collection Points**

- Water Bodies**
- Vegetation Map**
-  Birch
  -  Farm Field
  -  Grass Fields
  -  Marshland
  -  Spruce - Birch
  -  Tussock
  -  Trails

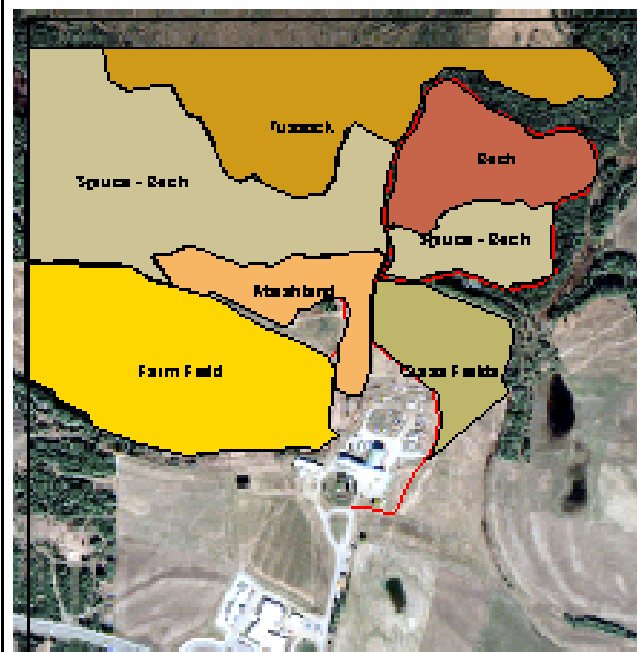


0.1 0 0.1 Miles

**Creamer's Field With Vegetation Map and Water Bodies**



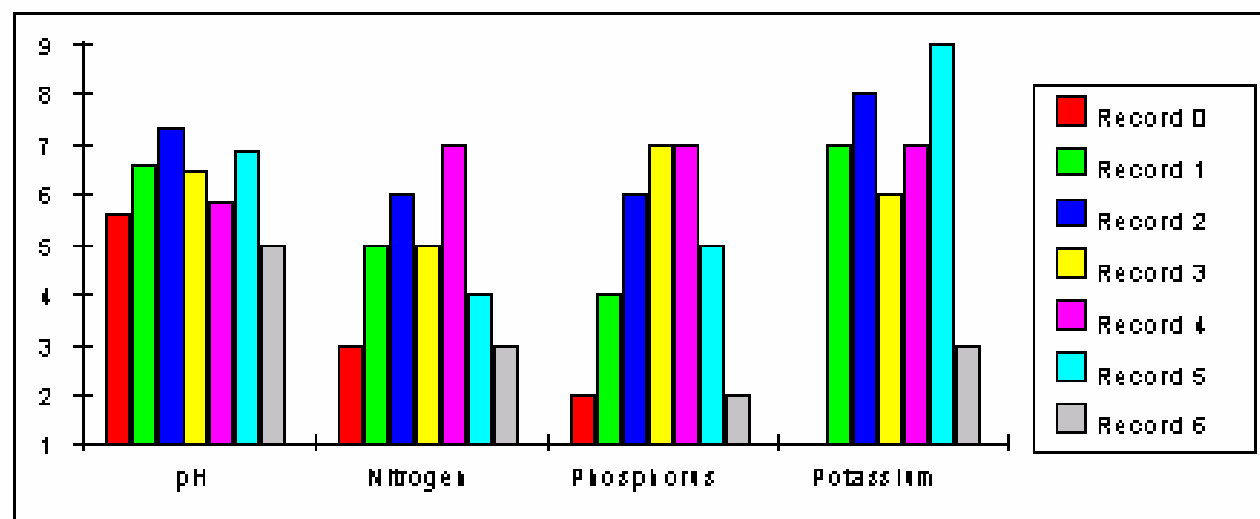


## Vegetation Map

- Birch
- Farm Field
- Grass Fields
- Marshland
- Spruce - Birch
- Tussock
- Trails



## pH, N, P, and K Test Results



# Conclusions

**We achieved getting a GIS project ready for the student's data which contained a geospatial map and themes for trails, vegetation, water bodies, pH, nitrogen, phosphorus, and potassium.**

**By using synthetic data we created the attribute tables for the various themes with the created polygon shape files at collection points, thus students would only have to enter their lab results and the computer would reconfigure to their individual results.**

# **Future Directions**

- **In September, Ryan Middle School eighth grade students will be out at Creamer's Fields collecting soil samples, vegetation types, and analyzing data.**
- **After evaluation of the program with the students, we will be creating an other working cite with GIS using Angel Rocks.**

# **Acknowledgements**

- **Anupma Prakash**
- **Neil Brown**
- **Gary Cooper**
- **Bill Witte**
- **The rest of the GPS-GIS class for all the support and help.**