



2011 Supplement to the Preliminary Wetland Study Results Report

in support of the
Environmental Impact Statement

West Davis Corridor Project

Federal Highway Administration
Utah Department of Transportation



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1.0 Introduction

This report describes the methodology and field activities that HDR conducted to complete a follow-up survey of wetland resources for the West Davis Corridor (WDC) project. The WDC team, which includes the Utah Department of Transportation (UDOT) and the Federal Highway Administration (FHWA), developed a wetland methodology in 2010 in cooperation with the U.S. Army Corps of Engineers (USACE), the U.S. Fish and Wildlife Service (USFWS), the U.S. Environmental Protection Agency (EPA), and the Utah Division of Wildlife Resources (UDWR).

The initial wetland survey was conducted in May and June of 2010 (UDOT 2010b). Since then, local governments and members of the public have asked the WDC team to check some areas to ensure that the wetland boundaries were accurate, and as a result the WDC team decided to re-survey wetland areas.

In May 2011, the WDC team went into the field with representatives of the resource agencies to discuss the results of the 2010 survey and to look at specific wetland areas that had been the focus of local government and public comments. Based on the comments on the initial wetland survey and discussions with the resource agency representatives, the WDC team decided to conduct a second wetland survey in a modified wetland survey area.

What is the modified wetland survey area?

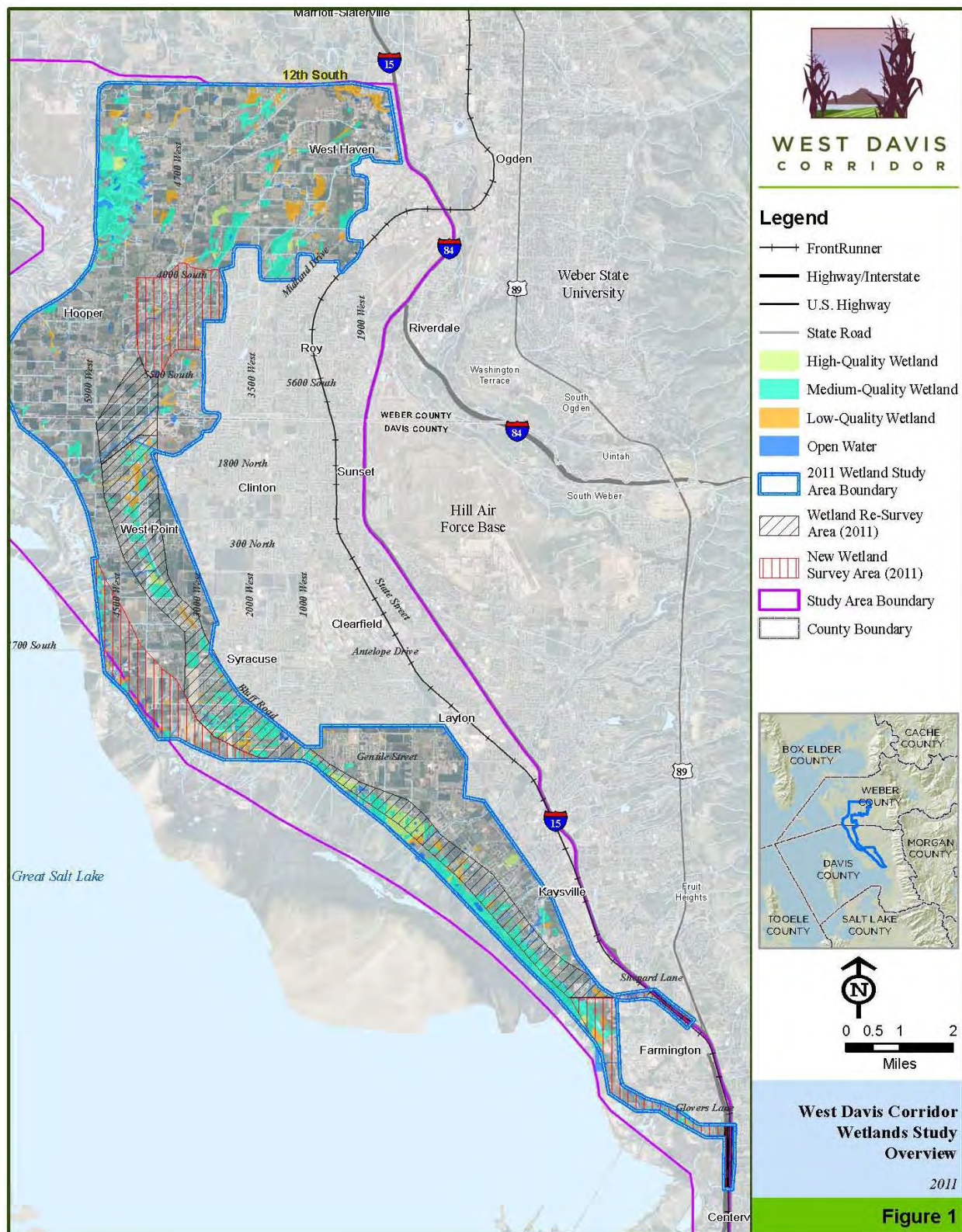
The *modified wetland survey area* is the area evaluated for wetlands during the re-survey in 2011. This area is about 4,700 acres larger than the original wetland survey area used in 2010.

This modified wetland survey area includes some of the original survey area and also includes areas outside of the original area where alternatives were being considered. The parts of the original survey area that are not included in the 2011 re-survey primarily include areas north of 4000 South and the heavily developed areas on the eastern side of the study area where few wetlands were found in the initial survey.

1.1 Directions to the Survey Area

The modified wetland survey area, which is smaller than the overall WDC project study area, covers about 33,700 acres (about 52.6 square miles) on the west side of Interstate 15 (I-15) from Centerville in Davis County north to West Haven in Weber County (see Figure 1 below). This is 4,700 acres larger than the 2010 wetland survey area. The size of the survey area was increased to include alternatives in Farmington and Syracuse that are outside of the 2010 wetland survey area. Most of the modified wetland survey area is accessible by local arterial and residential roads.

Figure 1. Overview



1.2 Field Conditions in the Survey Area

1.2.1 Weather and Vegetation

The field reconnaissance for the re-survey was conducted over a 4-week period from May 17 through June 15, 2011. (The initial survey was conducted from May 24 through June 11, 2010). This area of Utah had unusually cold and wet springs in both 2010 and 2011, which led to very wet conditions in the region in general. Most of the tree and shrub species were leafed out at the time of the field reconnaissance. Most of the herbaceous plant species, including grasses and forbs, were identifiable based on plant growth, although some were in the emergent stages. Weather during the field work ranged from rain with temperatures in the upper 40s (Fahrenheit) to sunshine with temperatures in the mid-80s. In general, temperatures were favorable with highs in the mid-70s.

1.2.2 Landscape and Land Use

The survey area is located along the east side of the Great Salt Lake. The topography in this area has very little relief and slopes gently toward the west. The western boundary of the survey area along the Great Salt Lake consists mostly of emergent marsh wetlands. The rest of the survey area ranges from sparse development and extensive agricultural use to densely developed subdivisions and industrial areas. There are wetlands throughout most of the survey area.

Land uses in the survey area are changing extensively. Many residential and commercial developments are under construction or have been completed in the last 10 years. The developments and agricultural land use appear to be affecting the hydrology of and plant communities in some wetland areas.

What is hydrology?

In this report, *hydrology* refers to the water in an area.

1.2.3 General Hydrology

Most of the large wetland areas along the western boundary of the survey area are associated with the Great Salt Lake. Most of the surface water is associated with human-made canals, ditches, and drains. The groundwater table in the area is very shallow, as shown by sloughs in many parts of the survey area. Many of the wetlands reviewed during this survey are depressional and collect surface water during snowmelt runoff and precipitation events.

Much of the survey area is influenced by flood irrigation. The wetland survey teams did not distinguish between areas that are supported primarily by irrigation water and areas that are supported primarily by other water sources, but the teams noted in the rapid assessment

What are hydrophytic plants?

Hydrophytic plants are plants that thrive in wet conditions. The presence of hydrophytic plants is one indicator of a wetland.

checklist if irrigation water was part of the hydrology. (For a copy of this checklist, see the attachment to UDOT 2010a.)

In some cases, there was no apparent hydrology when the wetland survey was conducted, but there was a dominance of hydrophytic plants. In these cases, the area was mapped as a wetland. In other cases, some areas were temporarily inundated as a result of overflowing ditches or canals due to the unusual flooding this spring. If these flooded areas did not have a dominance of hydrophytic plants, they were not mapped as wetlands because this flooding is a rare event and does not represent the typical hydrologic conditions.

2.0 Wetland Assessment Methodology

The 2011 wetland survey consisted of two parts: a more focused re-survey of the original survey area, where the viable project alternatives would likely be located (see Section 3.1, Results for the Re-Survey Areas), and a full survey of three new areas outside the original survey area that are now being considered because of alternatives selection process (see Section 3.2, Results for the New Survey Areas).

HDR personnel Trent Toler, Donovan Gross, and Nate Nichols, conducted the field reconnaissance for the re-survey areas and the new areas between May 17 and June 15, 2011. As in 2010, the team mapped wetland boundaries using a handheld Trimble GeoExplorer XT global positioning system (GPS) unit or by drawing approximate wetland boundaries in the field into ArcMap geographical information system (GIS) software based on field notes and aerial photographs.

The re-survey work included verifying areas surveyed in 2010 based on comments provided by resource agencies, municipalities, and the public. The re-survey work involved traveling to each 2010 wetland polygon in the original survey area (see Figure 1, Overview, on page 3) to verify whether any of the polygons were mis-assigned.

In addition, for those polygons that appeared to still be a potential wetland, the team verified whether the boundaries were appropriately drawn based on previous discussions with USACE during a 2011 field visit.

The team conducted the field verification by checking the vegetation species and hydrology (if any) in the polygon. The observations by the team were then compared to the data that were recorded in 2010, and any discrepancies were corrected either by using the GPS unit or by editing the hard-copy maps that defined the 2010 wetland boundaries.

The full survey of the new areas was conducted using the same wetland assessment methodology that was used for the 2010 survey (UDOT 2010a). The WDC team identified wetlands using GPS units with ArcPad software for all data collection and used the same rapid assessment checklist for evaluating the wetland's functional quality.

What is a wetland polygon?

A *wetland polygon* is a shape in GIS software that defines the boundaries of a wetland.

3.0 Results

This section provides the number and acres of wetlands based on revisions made during the 2011 wetland survey. To compare results between the 2010 and 2011 wetland surveys, the team developed a comparison area. This area includes the wetlands that were surveyed in 2010 but does not include the area of the Legacy Parkway or National Wetland Inventory (NWI) wetlands, since those areas were not surveyed in 2010. During the 2010 field reconnaissance, the team identified and characterized 378 wetlands, which cover an area of about 3,662 acres.

What is the comparison area?

The *comparison area* is an area that was developed to help the WDC team compare the results of the 2010 and 2011 wetland surveys. This area is smaller than the original wetland survey area from 2010.

Table 1 summarizes the wetlands found in 2010 that were within the comparison area. The field teams also identified and outlined 93 areas of open water that cover about 138 acres.

Table 1. Wetlands in the Comparison Area in 2010

Wetland Rating	Number of Wetlands	Total Acres	Percentage of Total Wetland Acres
High	30	361	15%
Medium	2,243	2,767	75%
Low	105	534	10%

Table 2 summarizes the wetlands found in 2011 that were within the comparison area. Between 2010 and 2011, about 66 fewer acres of wetlands were identified within the comparison area. About 120 fewer acres of wetlands were identified in a specific area of Kaysville west of the power corridor, but about 54 more acres of wetlands were identified outside this area. For a more detailed description of the changes, see Section 3.1, Results for the Re-Survey Areas.

Table 2. Wetlands in the Comparison Area in 2011

Wetland Rating	Number of Wetlands	Total Acres	Percentage of Total Wetland Acres
High	29	341	9%
Medium	273	2,657	74%
Low	134	598	17%

Table 3 summarizes the wetlands found in 2011 within the larger, 33,700-acre modified wetland survey area. The 2011 wetland field reconnaissance identified 607 wetlands covering an area of about 3,921 acres within the modified wetland survey area.

Table 3. Wetlands in the Modified Wetland Survey Area in 2011

Wetland Rating	Number of Wetlands	Total Acres	Percentage of Total Wetland Acres
High	34	353	9%
Medium	347	2,863	73%
Low	226	705	18%

3.1 Results for the Re-Survey Areas

The 2011 re-survey resulted in most of the original 2010 wetland polygons maintaining their original shapes. The boundaries of a few wetland areas had minor adjustments or modifications. Three areas had substantial changes: in Kaysville along the west side of the transmission line corridor, at Antelope Drive and 3000 West in Syracuse, and between 2300 North and 1800 North in Clinton and West Point.

Kaysville

Many comments from resource agencies, local government officials, and the public questioned the presence and boundaries of wetlands in the area west of the transmission line corridor in Kaysville. The WDC team visited this area with the resource agencies, including representatives from USACE, EPA, USFWS, and UDWR, on a field trip in May 2011. The initial survey team in 2010 had identified the majority of the area west of the transmission line corridor in Kaysville as potential wetlands due to a confounding mix of land manipulation and irrigation. During the agency field visit in May 2011, the agency representatives said that the wetland areas did not seem to be as continuous as they appeared on the WDC maps and data sheets.

The re-survey in 2011 included a more detailed survey of the wetland “fingers” that cross this area in order to correct this potential overestimate of the amount of wetlands. The re-survey in this area found about 120 fewer acres of potential wetlands compared to the 2010 survey (see Figure 2, Kaysville Area, on page 11). After more detailed inspection, the WDC team determined that the wetlands in this area are narrower and more “fingery”; that is, they follow the drainages in the area instead of being continuous throughout the entire area west of the transmission line corridor.

Also in the Kaysville area, just south of Kays Creek, another potential wetland area was incorrectly located on the project’s wetland maps, perhaps due to an out-of-date NWI wetland polygon. The error was spotted and corrected to show not only the proper location of the potential wetland but also a more detailed boundary. The wetland boundary was also updated to include the areas west of 2950 West.

Syracuse

In Syracuse, just south of Antelope Drive and west of 3000 West, a large pasture owned by the Cook family and by the Church of Jesus Christ of Latter-day Saints was recorded in 2010 as having four small potential wetland areas. Syracuse City asked the WDC team to re-survey this area because the City felt that this pasture was very wet and could contain more potential wetland areas than previously recorded. The WDC team re-surveyed this pasture and expanded the size of the potential wetland area based on the current wetland vegetation and hydrologic conditions (see Figure 3, Syracuse Area, on page 12).

Clinton and West Point

USACE asked the WDC team to re-survey an area between 1300 North and 2300 North and east of 4500 West in Clinton and West Point because USACE felt that the area could have additional wetlands. The WDC team re-surveyed this area and mapped an expanded area of potential wetlands adjacent to the Crane Field Golf Course on 2300 North. This golf course might have been under construction in 2010. Most of the area contains a network of saline wetland swales through livestock pastures (see Figure 4, Clinton/West Point Area, on page 13).

The WDC team also re-surveyed another smaller area south of 1800 North and west of the Layton Canal. This location has been disturbed or manipulated by various forces in recent years, including the installation of a major pipeline and hydrological changes by landowners. These disturbances, combined with the variety of irrigation practices in the area, create a confusing mix of conditions. In the re-survey, the WDC team determined that the field on the southeast corner of 1800 North and 4500 West is an irrigated pasture, not a wetland, based on the absence of dominant hydrophytic vegetation (see Figure 4, Clinton/West Point Area, on page 13).

3.2 Results for the New Survey Areas

Three new areas were added to the wetland survey area as a result of the alternatives analysis:

- An area around West Haven bounded by 4000 South on the north, 5500 South on the south, 5100 West on the west, and 4100 West on the east.
- An area west of the original wetland survey area in Syracuse and West Point bounded by Gentile Street on the south, 200 South on the north, the shoreline of the Great Salt Lake on the west, and the western edge of the previous wetland survey area on the east. This area includes the North Davis Sewer Treatment Plant properties.
- An area in Farmington around the Shepard Lane and Glovers Lane alignments.

West Haven

The new survey area in West Haven fills in a previously excluded area from the original survey area from about 5100 West to 4100 West and from 4000 South to 5500 South. This

area contains a mix of residential developments, smaller farms, and the Hooper Canal. The few potential wetlands in this area were found either close to the canal or near other water sources connected to the small farms.

West Point and Syracuse

This area extends the original survey area farther west to generally where the agricultural land gives way to the lakeshore wetlands. Most of the potential wetlands in this part of the new survey area are located by the western edge of the study area. Additionally, this area contains a few channels with wetland vegetation. These channels are located in areas where agricultural drainages converge before draining into the Great Salt Lake shorelands.

Farmington

In 2010, the WDC team had used Legacy Parkway or NWI data sets to identify potential wetland areas in Farmington. However, because the WDC team received comments from the resource agencies, local government representatives, and the public questioning the accuracy of these data, the WDC team surveyed the areas around the Shepard Lane and Glovers Lane alignments in 2011. The areas surveyed in Farmington include the area around an alignment going from western Farmington near the Central Davis Sewer District facility east to I-15 just south of Shepard Lane, and the area around an alignment that goes south from a point near the Central Davis Sewer District facility staying west and south of development in Farmington before connecting with Legacy Parkway and I-15 south of Glovers Lane.

The 2011 survey in this area found that the Shepard Lane section contained some wetlands and detention basins, primarily around I-15. The survey also found that the western end and south side of the Glovers Lane area contained Great Salt Lake lakeshore wetlands. The survey also identified some potential wetland areas among the residential developments along the east side of the frontage road on the east side of I-15 in Farmington and Centerville.

4.0 Drainages in the Modified Wetland Survey Area

USACE asked the WDC team to identify drainages in addition to the wetland areas. Obtaining drainage information was not included as part of the WDC wetland assessment methodology and was not included as part of the field work in 2010.

In 2011, to estimate the drainages in the wetland survey area, the WDC team obtained the most recent drainages file from the Utah Automated Geographic Reference Center (AGRC) and edited or updated this file based on its field observations or analysis of recent aerial photos. The WDC team found the AGRC drainages file to be fairly accurate for most of the major drainages and canals in the survey area (such as Kays Creek, Farmington Creek, Howard Slough, Layton Canal, and Hooper Canal), although in some areas the lines were approximate, since most had been digitized off of older U.S. Geographical Survey (USGS) topographic maps. The WDC team removed some drainage lines based on field visits or aerial photos that showed that the drainage no longer existed due to recent development.

5.0 Future Uses of the Report Findings

The WDC team will use the information in this report during the alternatives development process and as it analyzes the expected impacts of the project alternatives. If UDOT and FHWA select an action alternative as the preferred alternative, the team will conduct a detailed wetland delineation of the survey area for the preferred alternative. That delineation will follow the 1987 *Corps of Engineers Wetlands Delineation Manual* and the 2008 *Final Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (both authored by Environmental Laboratory).

6.0 References

[UDOT] Utah Department of Transportation

- 2010a Wetland Assessment Methodology, Technical Report 8, in Support of the West Davis Corridor Project. April.
- 2010b Preliminary Wetland Study Results in Support of the West Davis Corridor Project. July.

Figure 2. Kaysville Area

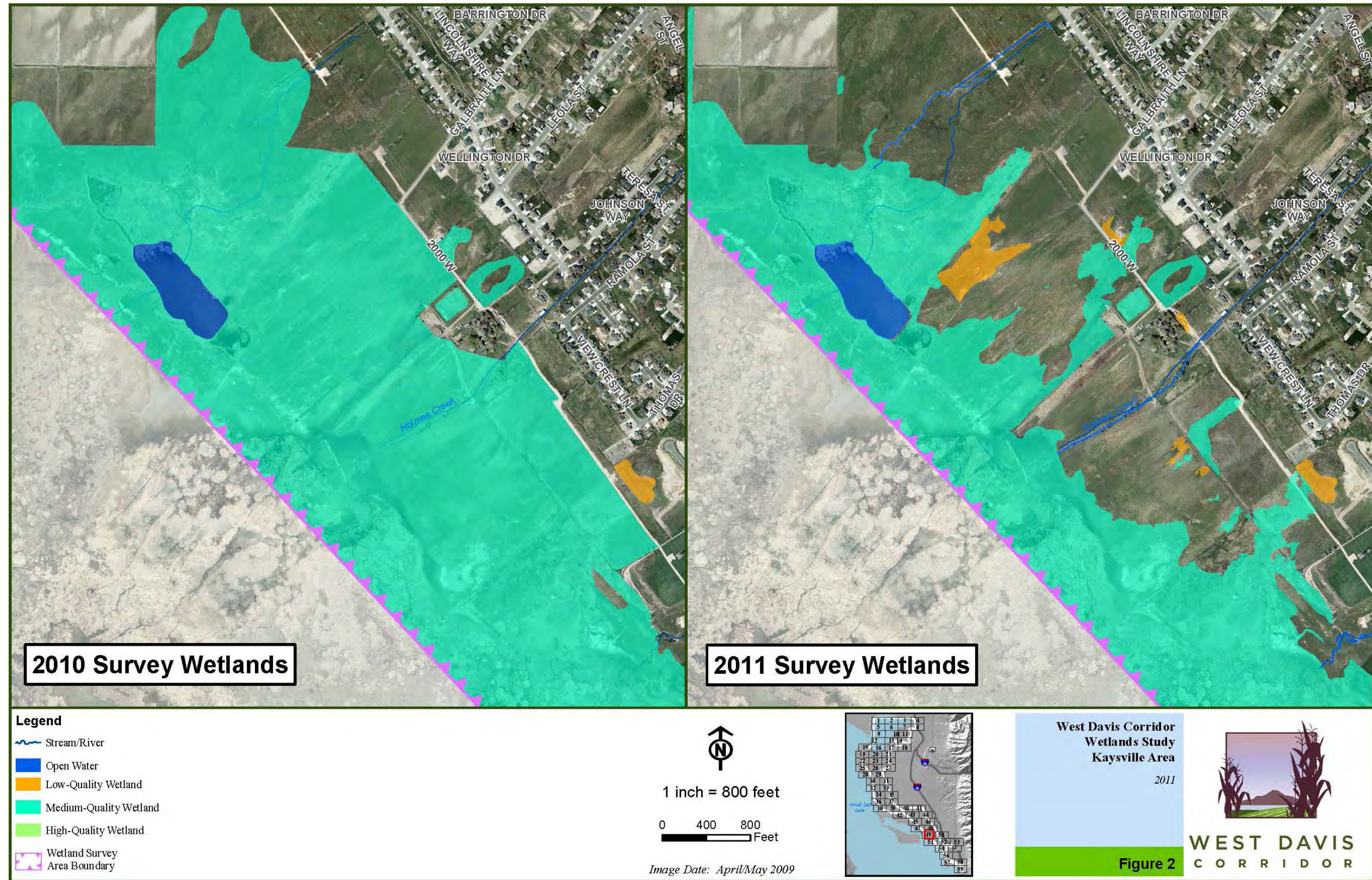


Figure 3. Syracuse Area

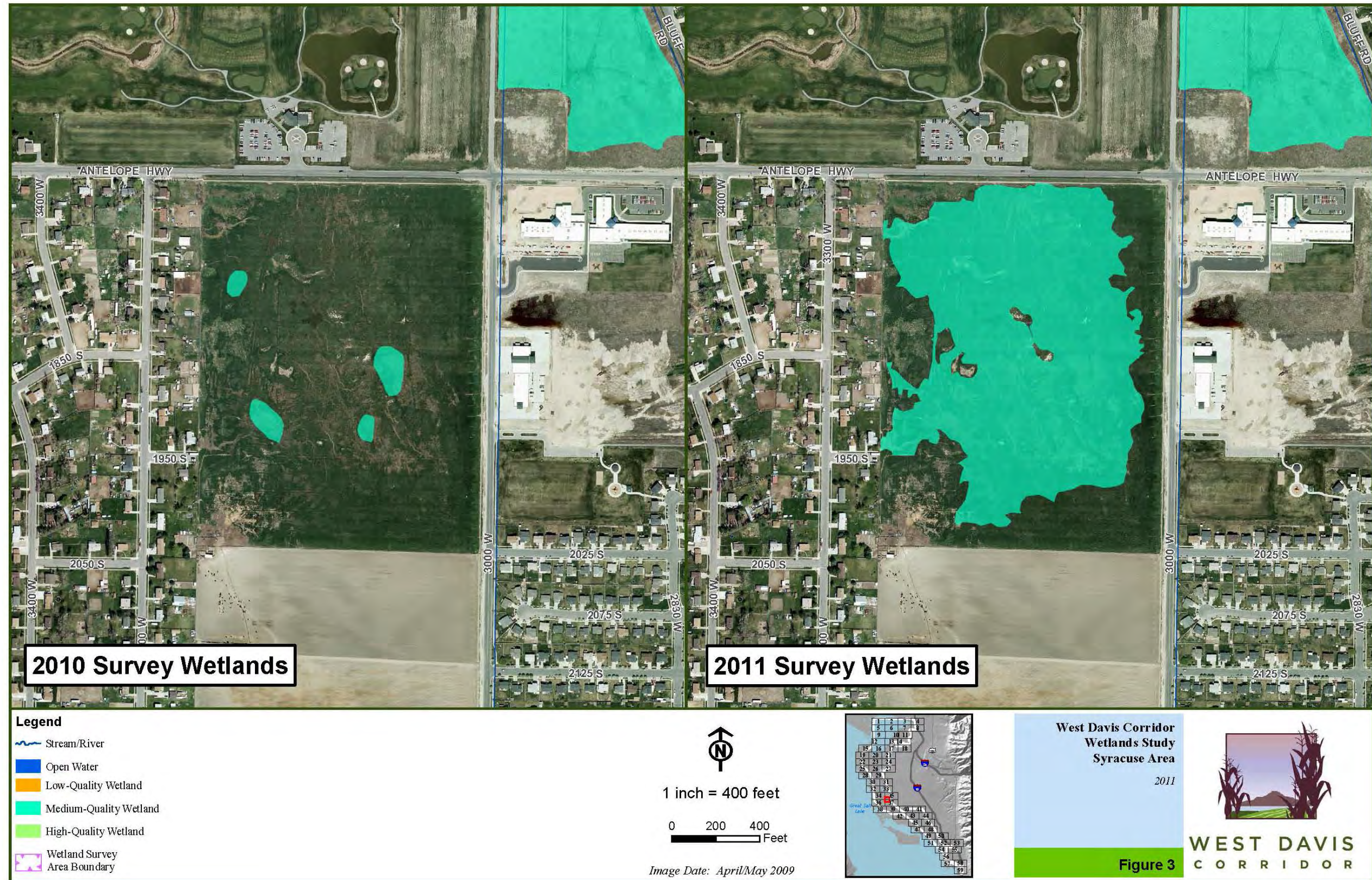
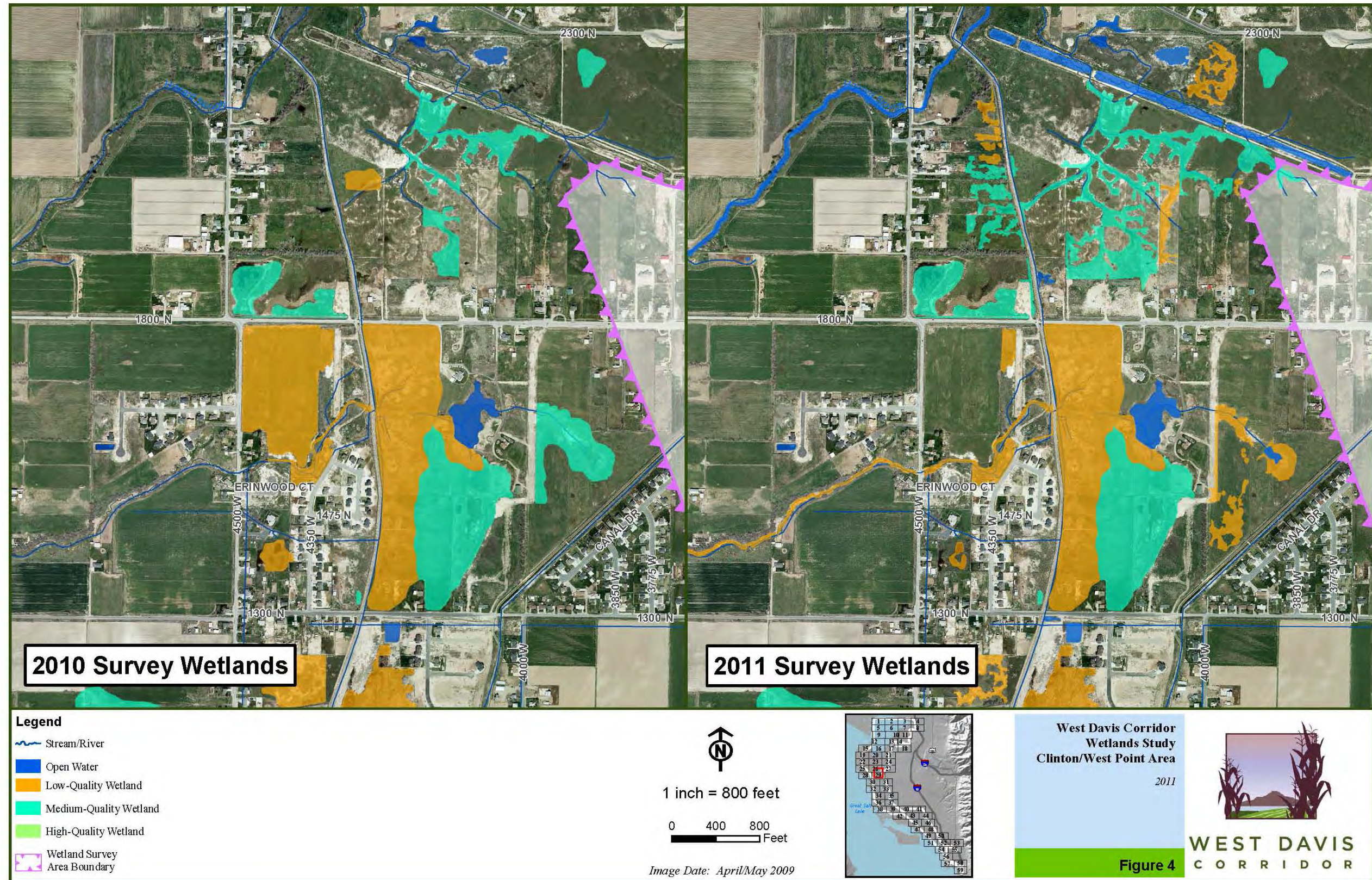


Figure 4. Clinton/West Point Area



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