



APPLICATIONS FOR SECTION 404 AND  
401 PERMITS FOR DAYTON  
INTERNATIONAL AIRPORT  
LRH-2009-682 GMR- UNNAMED TRIB TO  
STILLWATER RIVER

October 19, 2012

PREPARED FOR:

**City of Dayton**  
**Department of Aviation**

3600 Terminal Drive, Suite 300  
Vandalia, Ohio 45377

PREPARED BY:

**LJB Inc.**

2500 Newmark Drive  
Miamisburg, OH 45342  
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Heather Lacey, Associate (hlacey@LJBinc.com)  
Shannon Mueller, Biologist (smueller@LJBinc.com)

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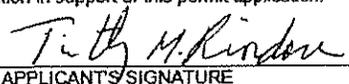
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 **FORM ENG 4345**

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APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT (33 CFR 325)			OMB APPROVAL NO. 0710-0003 EXPIRES: 31 August 2012		
Public reporting burden for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.					
<p align="center"><b>PRIVACY ACT STATEMENT</b></p> <p>Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.</p>					
<b>(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)</b>					
1. APPLICATION NO.		2. FIELD OFFICE CODE		3. DATE RECEIVED	
<b>(ITEMS BELOW TO BE FILLED BY APPLICANT)</b>					
5. APPLICANT'S NAME:			8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)		
First - Tim Middle - Last - Riordan			First - Heather Middle - Last - Leacy		
Company - City of Dayton			Company - LJB Inc.		
E-mail Address - tim.riordan@daytonohio.gov			E-mail Address - hleacy@ljbinc.com		
6. APPLICANT'S ADDRESS:			9. AGENT'S ADDRESS		
Address - 3600 Terminal Drive, Suite 300			Address - 2500 Newmark Drive		
City - Vandalia State - OH Zip - 45377 Country - USA			City - Mansburg State - Ohio Zip - 45432 Country - USA		
7. APPLICANT'S PHONE NOS. W/AREA CODE:			10. AGENT'S PHONE NOS. W/AREA CODE		
a. Residence b. Business c. Fax			a. Residence b. Business c. Fax		
937-333-3600			937-307-0744 (cell) 937-259-5143 937-259-5100		
<b>STATEMENT OF AUTHORIZATION</b>					
11. I hereby authorize, <u>Heather Leacy, LJB Inc.</u> to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.					
 APPLICANT'S SIGNATURE			<u>12-3-2012</u> DATE		
<b>NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY</b>					
12. PROJECT NAME OR TITLE (see instructions)					
Dayton International Airport Culvert Extension					
13. NAME OF WATERBODY, IF KNOWN (if applicable)			14. PROJECT STREET ADDRESS (if applicable)		
Unnamed Tributary of the Stillwater River			Address Northeast of Dog Leg Road & U.S. 40 (National Road) intersection		
15. LOCATION OF PROJECT			City - Dayton State - Ohio Zip - 45377		
Latitude: *N 39° 53'26.47"					
Longitude: *W 84° 15'3.153"					
16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)					
State Tax Parcel ID R72 717413 0001 Municipality City of Dayton					
Section - Township - Range -					
17. DIRECTIONS TO THE SITE					
From Cincinnati- Take I-75 North towards Dayton; Take exit 63 for U.S.-40 towards Vandalia/Donnelsville; Turn left at U.S.-40 West/ East National Road; Turn Right at Dog Leg Road. Project is on right within the gated Dayton International Airport property.					



## SECTION 401 APPLICATION

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## APPLICATION FOR OHIO EPA SECTION 401 WATER QUALITY CERTIFICATION

**Effective October 1, 1996  
Revised August, 1998**

This application must be completed whenever a proposed activity requires an individual Clean Water Act Section 401 Water Quality Certification (Section 401 certification) from Ohio EPA. A Section 401 certification from the State is required to obtain a federal Clean Water Act Section 404 permit from the U.S. Army Corps Engineers, or any other federal permits or licenses for projects that will result in a discharge of dredged or fill material to any waters of the State. To determine whether you need to submit this application to Ohio EPA, contact the U.S. Army Corps of Engineers District Office with jurisdiction over your project, or other federal agencies reviewing your application for a federal permit to discharge dredged or fill material to waters of the State, or an Ohio EPA Section 401 Coordinator at (614) 644-2001.

The Ohio EPA Section 401 Water Quality Certification Program is authorized by Section 401 of the Clean Water Act (33 U.S.C. 1251) and the Ohio Revised Code Section 6111.03(P). Ohio Administrative Code (OAC) Chapter 3745-32 outlines the application process and criteria for decision by the Director of Ohio EPA. In order for Ohio EPA to issue a Section 401 certification, the project must comply with Ohio's Water Quality Standards (OAC 3745-1) and not potentially result in an adverse long-term or short-term impact on water quality. Included in the Water Quality Standards is the Antidegradation Rule (OAC Rule 3745-1-05), effective October 1, 1996, revised October, 1997 and May, 1998. The Rule includes additional application requirements and public participation procedures. **Because there is a lowering of water quality associated with every project being reviewed for Section 401 certification, every Section 401 certification applicant must provide the information required in Part 10 (pages 3 and 4) of this application.** In addition, applications for projects that will result in discharges of dredged or fill material to wetlands must include a wetland delineation report approved by the Corps of Engineers, a wetland assessment with a proposed assignment of wetland category (ies), official documentation on evaluation of the wetland for threatened or endangered species, and appropriate avoidance, minimization, and mitigation as prescribed in OAC 3745-1-50 to 3745-1-54. Ohio EPA will evaluate the applicant's proposed wetland category assignment and make the final assignment.

Information provided with the application will be used to evaluate the project for certification and is a matter of public record. If the Director determines that the application lacks information necessary to determine whether the applicant has demonstrated the criteria set forth in OAC Rule 3745-32-05(A) and OAC Chapter 3745-1, Ohio EPA will inform the applicant in writing of the additional information that must be submitted. The application will not be accepted until the application is considered complete by the Section 401 Coordinator. An Ohio EPA Section 401 Coordinator will inform you in writing when your application is determined to be complete.

Please submit the following to "Section 401 Supervisor, Ohio EPA/DSW, P.O. Box 1049, Columbus, Ohio 43216-1049:

- Four (4) sets of the completed application form, including the location of the project (preferably on a USGS quadrangle) and 8-1/2 x 11" scaled plan drawings and sections.
- One (1) set of original scaled plan drawings and cross-sections (or good reproducible copies).

**(See Application Primer for detailed instructions)**

1. The federal permitting agency has determined this project: (check appropriate box and fill in blanks)

- a.  requires an individual 404 permit/401 certification- Public Notice # (if known) \_\_\_\_\_
- b.  requires a Section 401 certification to be authorized by Nationwide Permit # \_\_\_\_\_
- c.  requires a modified 404 permit/401 certification for original Public Notice # \_\_\_\_\_
- d.  requires a federal permit under \_\_\_\_\_ jurisdiction identified by # \_\_\_\_\_
- e.  requires a modified federal permit under \_\_\_\_\_ jurisdiction identified by # \_\_\_\_\_

Click to clear all entered information (on all 4 pages of this form) CLEAR



2. Application number (to be assigned by Ohio EPA):

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3. Name and address of applicant: Telephone number during business hours:  
 Tim Riordan, City Manager  
 City of Dayton Department of Aviation ( ) (Residence)  
 3600 Terminal Drive, Suite 300 ( 937 ) 333-3600 (Office)  
 Vandalia, OH 45377

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3a. Signature of Applicant: *Timothy H. Riordan* Date: *1/2-3-2012*

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4. Name, address and title of authorized agent: Telephone number during business hours:  
 Ms. Heather Lacey  
 LJB Inc. ( 937 ) 307-0744 (Residence)  
 2500 Newmark Drive ( 937 ) 259-5143 (Office)  
 Miamisburg, Ohio 45342

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4a. Statement of Authorization: I hereby designate and authorize the above-named agent to act in my behalf in the processing of this permit application, and to furnish, upon request, supplemental information in support of the application.  
 Signature of Applicant: *Timothy H. Riordan* Date: *1-2-3-2012*

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5. Location on land where activity exists or is proposed. Indicate coordinates of a fixed reference point at the impact site (if known) and the coordinate system and datum used.  
 Address:  
 Northeast of Dog Leg Road and U.S. Route 40 (National Road) intersection; 39° 53'25.47" N 84° 15'3.153" W  
 Street, Road, Route, and Coordinates, or other descriptive location

050800011406	Montgomery	Dayton	OH	45377
Watershed	County	Township	City	State
				Zip Code

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6. Is any portion of the activity for which authorization is sought complete?  Yes  No  
 If answer is "yes," give reasons, month and year activity was completed. Indicate the existing work on the drawings.

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7. List all approvals or certifications and denials received from other federal, interstate, state or local agencies for any structures, construction, discharge or other activities described in this application.

Issuing Agency	Type of Approval	Identification No.	Date of Application	Date of Approval	Date of Denial
OEPA	NPDES		Will apply 21 days prior to construction		

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8. DESCRIPTION OF THE ACTIVITY (fill in information in the following four blocks - 8a, 8b, 8c & 9)

8a. Activity: Describe the Overall Activity:  
 The City of Dayton Department of Aviation will impact a total of 1,575 linear feet of an unnamed tributary of the Stillwater River (Stream A) with the extension of a culvert on the Dayton International Airport property in Dayton, Montgomery County, Ohio.

APPROVED AS TO FORM AND CORRECTNESS  
*John P. ...*  
 CITY ATTORNEY

\*\*No Commission Action Required\*\*

8b. Purpose: Describe the purpose, need and intended use of the activity:

The purpose of the project is to improve human safety by reducing wildlife strikes and by reducing the severity of events involving aircraft that depart the runway during critical phases of flight in this area of the airport. To accomplish this purpose, there is a need to remove access to the stream channel which serves as potential wildlife attractant, and poses a risk to aircraft that inadvertently depart the runway. Further information on the purpose and need for the proposed activity is provided in section 10(a) of the attached antidegradation portion of the application.

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8c. Discharge of dredged or fill material: Describe type, quantity of dredged material (in cubic yards), and quantity of fill material (in cubic yards).

The proposed project will impact a total of 1,575 linear feet (0.18 acres) of Stream A with the placement of a 54 to 60 inch enclosed culvert pipe to extend the existing stormwater conveyance conduit from a headwall. Approximately 10,000 cubic yards of clean fill will be placed around the culvert to create a level ground surface.

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9. Waterbody and location of waterbody or upland where activity exists or is proposed, or location in relation to a stream, lake, wetland, wellhead or water intake (if known). Indicate the distance to, and the name of any receiving stream, if appropriate.

Stream A flows generally west-southwest through a culvert under Dog Leg Road and into a wetland located on the west side of the road. Drainage from the wetland flows south from the wetland into a channel with an ordinary high water mark (OHWM). This channel enters the Stillwater River which ultimately leads into the Great Miami River.

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**10. To address the requirements of the Antidegradation Rule, your application must include a report evaluating the:**

- Preferred Design (your project) and Mitigative Techniques
- Minimal Degradation Alternative(s) (scaled-down version(s) of your project) and Mitigative Techniques
- Non-Degradation Alternative(s) (project resulting in avoidance of all waters of the state)

At a minimum, item a) below must be completed for the Preferred Design, the Minimal Degradation Alternative(s), and the Non-Degradation Alternative(s), followed by completion of item b) for each alternative, and so on, until all items have been discussed for each alternative (see Primer for specific instructions).

10a) Provide a detailed description of any construction work, fill or other structures to occur or to be placed in or near the surface water. Identify all substances to be discharged, including the cubic yardage of dredged or fill material to be discharged to the surface water.

10b) Describe the magnitude of the proposed lowering of water quality. Include the anticipated impact of the proposed lowering of water quality on aquatic life and wildlife, including threatened and endangered species (include written comments from Ohio Department of Natural Resources and U.S. Fish and Wildlife Service), important commercial or recreational sport fish species, other individual species, and the overall aquatic community structure and function. Include a Corps of Engineers approved wetland delineation.



- 10c) Include a discussion of the technical feasibility, cost effectiveness, and availability. In addition, the reliability of each alternative shall be addressed (including potential recurring operational and maintenance difficulties that could lead to increased surface water degradation.)
- 10d) For regional sewage collection and treatment facilities, include a discussion of the technical feasibility, cost effectiveness and availability, and long-range plans outlined in state or local water quality management planning documents and applicable facility planning documents.
- 10e) To the extent that information is available, list and describe any government and/or privately sponsored conservation projects that exist or may have been formed to specifically target improvement of water quality or enhancement of recreational opportunities on the affected water resource.
- 10f) Provide an outline of the costs of water pollution controls associated with the proposed activity. This may include the cost of best management practices to be used during construction and operation of the project.
- 10g) Describe any impacts on human health and the overall quality and value of the water resource.
- 10h) Describe and provide an estimate of the important social and economic benefits to be realized through this project. Include the number and types of jobs created and tax revenues generated and a brief discussion on the condition of the local economy.
- 10i) Describe and provide an estimate of the important social and economic benefits that may be lost as a result of this project. Include the effect on commercial and recreational use of the water resource, including effects of lower water quality on recreation, tourism, aesthetics, or other use and enjoyment by humans.
- 10j) Describe environmental benefits, including water quality, lost and gained as a result of this project. Include the effects on the aquatic life, wildlife, threatened or endangered species.
- 10k) Describe mitigation techniques proposed (except for the Non-Degradation Alternative):
  - o Describe proposed Wetland Mitigation (see OAC 3745-1-54 and Primer)
  - o Describe proposed Stream, Lake, Pond Mitigation (see Primer)

11. Application is hereby made for a Section 401 Water Quality Certification. I certify that I am familiar with the information contained in this application and, to the best of my knowledge and belief, such information is true, complete and accurate. I further certify that I possess the authority to undertake the proposed activities or I am acting as the duly authorized agent of the applicant.

\_\_\_\_\_  
Signature of Applicant

12/17/12  
Date

*Heather Lacy*  
Signature of Agent

*The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in Block 3 has been filled out and signed.*



## PART 10 ANTIDEGRADATION RULE ANALYSIS

The following is a discussion of alternatives considered for the proposed project. Although stream avoidance measures were diligently employed throughout the development of alternatives, waters of the United States will be unavoidably affected. Stream impacts associated with the project have, to every extent practicable, been evaluated based on the need for human safety throughout the planning and design processes and balanced against appropriate engineering design criteria.

### 10 (A) DETAILED PROJECT DESCRIPTION

#### Project Description

The City of Dayton Department of Aviation is proposing to impact a total of 1,575 linear feet of an unnamed tributary of the Stillwater River (Stream A) with the extension of a culvert on the Dayton International Airport (DAY) property in Dayton, Montgomery County, Ohio. The impact site is located to the southwest of the taxiway and to the east of Dog Leg Road. The stream is located within the Air Operations Area (AOA) and a portion is within the extended object free area of the runway. The proposed culvert extension will expand an existing stormwater conveyance conduit from a headwall that is currently draining the adjacent runway and taxiways. Stream A is a 1<sup>st</sup> order, intermittent, relatively permanent water (RPW) which is an indirect tributary to the Great Miami River, a traditional navigable water (TNW). and is a water of the United States, as determined by the Huntington District U.S. Army Corps of Engineers in a letter dated January 11, 2009. The jurisdictional determination letter is provided in Appendix B.

#### Purpose and Need

During the past century, wildlife strikes have resulted in the loss of hundreds of lives world-wide as well as billions of dollars worth of aircraft damage. As reported in the Federal Aviation Administration (FAA) Advisory Circular on Hazardous Wildlife Attractants on or Near Airports, poorly drained areas, retention ponds, and wetlands may be used by wildlife for escape, feeding, loafing, or reproduction. Wildlife use of areas within an airport's approach or departure airspace, aircraft movement areas, loading ramps, or aircraft parking areas may cause conditions hazardous to aircraft safety. All species of wildlife can pose a threat to aircraft safety. However, some species are more commonly involved in aircraft strikes than others. Table 1 lists the wildlife groups commonly reported as being involved in damaging strikes to U.S. aircraft from 1993 to 1995 (taken from the FAA Advisory Circular; a copy is provided in Appendix F).

Land use practices that attract or sustain hazardous wildlife populations on or near airports can significantly increase the potential for wildlife-aircraft collisions. FAA recommends against land use practices that attract or sustain populations of hazardous wildlife within the vicinity of airports or cause movement of hazardous wildlife onto, into, or across the approach or departure airspace, aircraft movement area, loading ramps, or aircraft parking area of airports.

**Table 1. Wildlife Groups Involved in Damaging Strikes to Civilian Aircraft, USA, 1993-1995.**

Wildlife Groups	Percent involvement in reported damaging strikes
Gulls	28
Waterfowl	28
Raptors	11
Doves	6
Vultures	5
Blackbirds- Starlings	5
Corvids	3
Wading birds	3
Deer	11
Canids	1



The Dayton International Airport reported 83 wildlife strikes from 1990 to 2000 according to the Wildlife Hazard Assessment for Dayton International Airport, prepared by the U.S. Department of Agriculture (USDA). In order to minimize wildlife strikes with aircrafts, USDA recommended that the Airport maintain a zero tolerance policy towards hazardous wildlife and suggested managing the grounds on the airport property to decrease the attractiveness to wildlife. The proposed culvert extension will remove areas of wildlife attractants and will likely result in the reduced number of wildlife strikes at the Dayton International Airport. A copy of the Wildlife Hazard Assessment for the Dayton International Airport and the FAA Circular are provided in Appendix F.

In addition to wildlife hazards, the stream channel poses a risk to aircraft that inadvertently depart the runway. Minimizing the number of terrain imperfections such as streams, ditches, hills etc. in an airport environment serves not only to reduce the risk of wildlife strikes but to also reduce the severity of events involving aircraft that depart the runway during critical phases of flight. The severity of aircraft impacts into streams or terrains, when inadvertent runway departures occur, increases the likelihood of harm to passengers and crewmembers. It is considered a necessary risk management practice to reduce the number of potential hazards in an active AOA. The proposed culvert extension will create level terrain in the AOA on the Dayton International Airport.

An example of an event specifically related to this particular stream is a fatal crash that occurred in 2004 at DAY. The National Transportation Safety Board (NTSB) incident brief indicates that the “terrain condition – ground” was a contributing factor to the in flight collision with the terrain.

Based on the discussion above, the purpose of the project is to improve human safety by reducing wildlife strikes and by reducing the severity of events involving aircraft during critical phases of flight in this area of the airport. To accomplish this purpose, there is a need to remove access to the stream channel which serves as potential wildlife attractant, and poses a risk to aircraft that inadvertently depart the runway.

### **Aquatic Resources**

An unnamed tributary of the Stillwater River (designated Stream A), is present within the project area. Stream A is a 1<sup>st</sup> order, intermittent, relatively permanent water (RPW) which is an indirect tributary to the Great Miami River, a traditional navigable water (TNW). A HHEI score of 49 indicates that Stream A is a modified Class II primary headwater habitat (PHWH) stream (see HHEI Form in Appendix C). As stated previously, Stream A collects stormwater from closed stormwater systems draining the airport runway and taxiways. From the project area Stream A flows generally west-southwest through a culvert under Dog Leg Road and into a wetland located on the west side of the road. Drainage from the wetland flows south from the wetland into a channel with an ordinary high water mark (OHWM). This channel ultimately enters the Stillwater River. As discussed in the jurisdictional determination letter in Appendix B, Stream A is a water of the United States and is subject to regulation under the Section 404 of the Clean Water Act.

Stream A is located within the 12-digit Hydrologic Unit Code (HUC) 050800011406 Town of Irving-Stillwater River and is located within the West Milton and Tipp City USGS Quadrangle. The project area is located outside of the 100- and 500-year floodplains according to the FEMA National Flood Hazard Layer as Geographical Information System (GIS). According to the National Wetlands Inventory (NWI) map, and observations made by LJB during several site visits, there are no wetlands within the culvert extension project area. Copies of the HUC, USGS topographic, floodplain, and NWI maps are provided in Appendix A.



### Cultural Resources

The Ohio Historic Preservation Office's (OHPO) Online Mapping System was accessed to perform a preliminary investigation of potential cultural resources in the project area. This online tool provides data on previously identified and documented cultural resource. A one kilometer buffer around the project area was examined in this database for cultural resources, which could include previously investigated properties, properties that contain archeological resources, properties that are eligible for inclusion on the National Register of Historic Places (NRHP), and properties that are actually listed on the NRHP. One site was within the one kilometer buffer area. An archaeological survey conducted in 1984 of a potential runway expansion on the Dayton International Airport is located approximately 1,000 feet to the north of the culvert extension project area. The proposed project is not expected to impact any OHPO sites within the database.

### Endangered Species

Endangered species coordination for the subject property was conducted with ODNR and USFWS. No impacts to any federally endangered or threatened species will occur as a result of this project. Further discussion on impacts to endangered species is provided under section 10 (B).

### Alternatives Analysis

An alternative evaluation for the culvert extension project was discussed once the City of Dayton Department of Aviation was notified that the project area contained a jurisdictional stream. The feasibility of each alternative was assessed based on engineering factors and approximate construction costs along with the recognition that the stream is considered a wildlife attractant and could be hazardous to aircrafts on the nearby runway and taxiway.

### Avoidance and Minimization

As discussed under the Alternative Analysis section, multiple alternatives were investigated for the culvert extension project. Minimization of impacts to aquatic resources was considered in the selection of the preferred alternative. Due to the project purpose, the stream could not be completely avoided by any of the alternatives. The impacts under each alternative are detailed in the following section.

### ALTERNATIVES

The following alternatives have been used to evaluate the impacts of the surface water resources on other resources. The project location map, a U.S.G.S. topographic map, the three alternative site plans, and plan view and cross section view drawings showing the aquatic resource impact areas for the preferred alternative are included in Appendix A. Table 2 provides a summary of the impacts by alternative.

### Preferred Alternative

The preferred alternative will impact a total of 1,575 linear feet (0.18 acres) of Stream A with the placement of an enclosed culvert pipe to extend the existing stormwater conveyance conduit from a headwall. This area would continue to drain the adjacent runway and taxiways. Approximately 10,000 cubic yards of clean fill would be placed within the project area to cover the culvert and to create a level ground surface. The preferred alternative meets the purpose of the project by improving human safety by reducing wildlife strikes and reducing the severity of events involving aircraft that depart the runway during critical phases of flight in this area of the airport.



**Table 2: Summary of Surface Water Impacts by Alternative**

Alternative	Existing Channel Disturbed Due to Placement of Proposed Structure, Fill, or Channel Change		
	Length of Channel Disturbed (linear feet)	Fill	
		Volume (CY)	Area (acre)
Preferred Alternative	1,575	10,000	0.18
Minimal Degradation Alternative	470	5,000	0.05
Non-Degradation Alternative	26	4,000	0.0029

**Minimal Degradation Alternative**

The minimal degradation alternative will impact a total of 470 linear feet (0.05 acres) of Stream A. This alternative utilizes both an open bottom culvert and an enclosed culvert pipe to decrease the amount of linear feet of stream impacted. The open bottom culvert will prevent disturbance within the stream’s OHWM. Approximately 5,000 cubic yards of fill would be placed within the project area to create a more even ground surface. Like the preferred alternative, top soil would be added to cover the culvert and appropriately graded to provide a level terrain that can be easily mowed for maintenance.

**Non-Degradation Alternative**

The non-degradation alternative avoids impacts to most surface water resources in the project area. This alternative is proposed to have an open bottom culvert throughout Stream A with a total impact of 26 linear feet (0.0029 acres) near the west end of the channel. The impact would be necessary due to the placement of a connector culvert pipe to transition between the proposed open bottom culvert and the existing culverts under the road. The transition is needed to properly transport water from the two existing enclosed culverts under the road and the three-sided box culvert. Approximately 4,000 cubic yards of fill would be placed within the project area to create a more even ground surface. Since stream impacts under this alternative are minimal, the non-degradation alternative would be expected to be covered under the terms and conditions of a Nationwide Permit.

**10 (B) MAGNITUDE OF PROPOSED LOWERING OF WATER QUALITY**

**Preferred Alternative**

The proposed project occurs within the Town of Irving-Stillwater River sub-basin (HUC 050800011406) of the Great Miami River watershed (HUC 05080001). The project will impact 1,575 linear feet of an unnamed tributary of the Stillwater River (designated Stream A). Stream A is a 1<sup>st</sup> order, intermittent, relatively permanent water (RPW) and a Modified Class II PHWH stream.



Stream A collects stormwater from closed stormwater systems draining the airport runway and taxiways. Stream A is a generally straight, channelized stream dominated by silt substrate. Riparian corridor vegetation was removed prior to 2009 to reduce the wildlife attractiveness of the area. As a result, the vegetation surrounding the stream is now limited to maintained grass. The deepest pool was observed to be approximately 4 to 6 inches. The drainage area for this stream is approximately 0.082 square miles (see Basin Characteristics Report by USGS Streamstats in Appendix A). The channel was so deeply incised near the existing culvert headwall on the east end that the flow of water out into the west part of the channel is expected to only occur during high flow events.

This alternative will adversely affect indigenous plant and animal life by converting aquatic and riparian habitat into landscaped (mowed) area. These habitats currently support local aquatic and terrestrial wildlife.

Habitat destruction from the impact types described will be a permanent impact on the aquatic and biota. The mortality of some stream species, particularly those that are sessile organisms, will occur as a result of the proposed impacts. Refuges for the motile displaced species should be available downstream of the proposed impact area. Faunal diversity will be impacted locally, but would be expected to recover; therefore no significant shifts in the composition or diversity of aquatic communities are anticipated as a result of the proposed activities. Since the proposed impact is limited to a headwater stream, this alternative would not directly adversely affect sport or recreational fishes.

*Endangered Species Impacts* - The proposed culvert extension project was coordinated with the Ohio Department of Natural Resources (ODNR) and U.S. Fish and Wildlife Service (USFWS). ODNR indicated that a record for the upland sandpiper (*Bartramia longicauda*), threatened in Ohio, was found on the DAY property, approximately 600 feet north of the project area. According to ODNR, the upland sandpiper requires large open grasslands and shows a preference for nesting, feeding and courtship in vegetation less than 60 cm in height. Upland sandpipers are adaptable to human landscapes; in fact, airfields provide much of the remaining habitat in the Eastern United States. Since the project is creating additional open grassland that will be mowed, the preferred alternative may actually create additional suitable habitat for the upland sandpiper on the DAY property, and would not be expected to adversely impact the species.

While Englewood Reserve is located approximately 5,000 feet southwest of the project area, ODNR is not aware of any other unique ecological sites, geologic features, animal assemblages, scenic rivers, state wildlife areas, nature preserves, parks or forests or national wildlife refuges, parks or forests within one mile radius of the project area. They also indicated that they have no records for the Indiana bat capture locations or hibernacula within a ten mile radius of the project area.

According to the United States Fish and Wildlife Service, the project area is within the known or historic range of the Eastern massasauga (*Sistrurus catenatus catenatus*), rayed bean mussel (*Villosa fabalis*) and the Indiana bat (*Myotis sodalis*). On September 8, 2010, USFWS indicated that due to location and onsite habitat no impacts are expected for the bald eagle (*Haliaeetus leucocephalus*), Eastern massasauga (*Sistrurus catenatus catenatus*), rayed bean mussel (*Villosa fabalis*) and the Indiana bat (*Myotis sodalis*). A copy of the ODNR and USFWS correspondence is provided in Appendix G.

#### Minimal Degradation Alternative

This alternative will impact 470 linear feet of an unnamed tributary of the Stillwater River. Similar to the preferred alternative, this alternative will adversely affect indigenous plant and animal life by converting aquatic and riparian habitat into landscaped (mowed) area. No impact on sport or



recreational fishes is anticipated. The use of an open bottom culvert would be expected to have less of an impact on aquatic biota since the in-stream habitat would remain relatively intact.

**Non-Degradation Alternative**

As indicated previously in Table 2, the non-degradation alternative will impact 26 linear feet (0.0029 acres) of Stream A. Because this impact would be so minimal, it is not expected to lower the water quality within the project area and would have only minimal affects on any native habitats and is not expected to affect any indigenous wildlife or listed species.

**10 (C) APPLICANT'S PROJECT COSTS**

The project cost for each alternative is provided in Table 3.

**Preferred Alternative**

The culvert extension will include the use of 54 and 60 inch circular culvert pipe. This type of culvert has a low risk of foundation failure, is easy to assemble, install and remove. The culvert will be covered with topsoil, seed and mulch. All of these materials are widely used. The culverts have a structural life of approximately 50 years, and embankments are constructed to last indefinitely. This structure is designed to require minimal maintenance

**Table 3: Project Alternative Costs**

	Preferred Alternative	Minimum Degradation Alternative	Non-Degradation Alternative
Embankment In-place	\$100,000	\$50,000	\$40,000
Culvert Pipe	\$157,387	\$1,728,750	\$3,927,500
Topsoil, Seeding and Mulching	\$33,750	\$33,750	\$33,750
Labor and Contingency	\$58,227	\$420,727	\$800,250
<b>Total Project Cost</b>	<b>\$349,365</b>	<b>\$2,233,227</b>	<b>\$4,801,500</b>

**Minimal Degradation Alternative**

To reduce the amount of impacts to the stream within the OHWM the minimal degradation alternative uses an open bottom culvert. Similar to closed culverts, fill must be placed over and around the structure. Therefore, the widths of open bottom culvert footings increase as load bearing needs increase, so the structure will often be sized much larger than what would be needed for a circular culvert. The stability of the footings is essential to the structure, and in fact, this type of structure can have a high risk of foundation failure. Due to the wider widths needed to handle the load bearings, the installation requires substantial initial disturbance for the footing excavation. Due to the greater disturbance required and the relatively difficult installation procedures, the installation can be relatively expensive.

**Non Degradation Alternative**

To reduce the amount of impacts to Stream A, the non-degradation alternative uses an open bottom culvert for nearly the entire stream length. As seen in Table 2, and discussed in more detail under the minimal degradation alternative, this type of culvert pipe and the installation is relatively costly, particularly when compared to the cost for the traditional circular culvert under the preferred alternative.

**10 (D) SEWAGE PROJECTS**

This project is not a regional sewer project or a collection facility.



**10 (E) OTHER RELATED PROJECTS**

No other related projects are planned that could impact the unnamed tributary of the Stillwater River.

The City of Dayton Department of Aviation initially planned to extend a headwall and five culvert pipes into Mill Creek and the abutting wetland near the northern Dayton International Airport property boundary. This extension was needed to provide sufficient area for larger planes planned for the nearby taxiway and runway. However, the Federal Aviation Association (FAA) determined that the expansion of the adjacent taxiway was unnecessary and they will not provide funding for the culvert extension into Mill Creek. Consequently, this project has been put on hold for an unknown amount of time. The City of Dayton Department of Aviation would apply for all necessary permits if they continue with this project.

**10 (F) WATER POLLUTION CONTROLS****Preferred Alternative**

The project will obtain an NPDES construction storm water permit from the OEPA and a Storm Water Pollution Prevention Plan (SWP3) will be developed and implemented by the contractor if over one acre will be disturbed during the construction. The SWP3 will incorporate Best Management Practices required by the current NPDES Permit for Construction Activities during all proposed construction. Silt fences and permanent and temporary stabilization measures will be implemented to prevent sedimentation downstream of Stream A.

**Minimal Degradation Alternative**

Similar to the preferred alternative, the project will obtain an NPDES construction storm water permit from the OEPA and a Storm Water Pollution Prevention Plan (SWP3) will be developed and implemented by the contractor. Based on the wider excavations required for the open bottom culvert footings, the project would be expected to impact over 1 acre. The SWP3 will incorporate Best Management Practices required by the current NPDES Permit for Construction Activities during all proposed construction. Silt fences and permanent and temporary stabilization measures will be implemented to prevent sedimentation downstream of Stream A.

**Non Degradation Alternative**

Similar to the preferred alternative, the project will obtain an NPDES construction storm water permit from the OEPA and a Storm Water Pollution Prevention Plan (SWP3) will be developed and implemented by the contractor. Based on the wider excavations required for the open bottom culvert footings, the project would be expected to impact over 1 acre. The SWP3 will incorporate Best Management Practices required by the current NPDES Permit for Construction Activities during all proposed construction. Silt fences and permanent and temporary stabilization measures will be implemented to prevent sedimentation downstream of Stream A.

**10 (G) HUMAN HEALTH IMPACTS****Preferred Alternative**

The headwater stream leading into the Stillwater River has historically conveyed water from agricultural fields. Because there is not a significant flow, a culvert should suffice for the passage of flow without significantly altering the stream's water quality. During the site visit, signs of water quality degradation in the stream, such as the abundant development of an algae film, were noted. No significant changes in water quality compared to the existing conditions would be anticipated.



The stream to be impacted by the project is a smaller headwater stream which would not be expected to support important recreational or game fish. Therefore, human use of the receiving stream for food production would not be impacted. The stream to be impacted is also not reportedly used for public water drinking supply or for primary contact recreation. Overall, no negative impact on human health would be expected for the preferred alternative. The implementation of the preferred alternative has the potential increase safety for passengers.

#### **Minimal Degradation Alternative**

This alternative will impact 470 linear feet of stream. Similar to the preferred design, this alternative would not be expected to have a negative impact water quality, recreation, or human health. Similar to the preferred alternative, the implementation of the minimal degradation alternative has the potential increase safety for passengers.

#### **Non-Degradation Alternative**

Similar to both the preferred and minimal degradation alternatives, this alternative would not be expected to significantly impact water quality, recreation, or human health. Similar to the preferred and minimal degradation alternatives, the implementation of the non-degradation alternative has the potential increase safety for passengers.

### **10 (H) SOCIAL AND ECONOMIC BENEFITS GAINED**

According to the County profile provided by the Ohio Department of Development the population of Montgomery County was 542,237 in 2006 and is projected to decrease through 2030. The nearby city of Huber Heights was estimated to have a population of 38,177 in 2000. The 1999 median household income in Montgomery County was \$40,156, with about 6% of the population being below the poverty level. Approximately 84% of persons age 25 or older are high school graduates. The unemployment rate has hovered around 6% from 2002 to 2006. The largest employment sectors in the county include manufacturing, health care, state and local government, retail trade, accommodations and food service.

#### **Preferred Alternative**

Wildlife strikes cause significant economic problems as well as safety hazards. Wildlife strikes may cause expensive structural and mechanical damages to aircrafts even if they do not result in a crash. According to the Wildlife Hazard Assessment for Dayton International Airport (March 200- February 2001) report, a DC-10 struck a gull on May 16, 2010 at Dayton International Airport costing an estimated \$3.5 million in repairs and associated revenue losses. On June 6, 2001, an Airbus 300 struck a Canada goose on departure at the airport causing approximately \$3 million in engine damage. Reporting wildlife strikes is voluntary and data from three major airports in the United States has shown that less than 20% of all wildlife strikes are reported to the Federal Aviation Administration (FAA). From 1990 to 1999, reported wildlife strikes in the United States resulted in 196,293 hours of aircraft downtime and \$87.53 million in monetary losses. Direct monetary losses are estimated to be \$255.03 million per year, associated costs \$136.42 million per year and aircraft down time in excess of 471,867 hours per year if one assumes that all strikes are reported. The implementation of the preferred alternative has the potential to limit the wildlife strikes at the airport, minimizing damage to aircraft and increase safety for passengers, The project would not be expected to impact the local tax base and property values.

**Minimal Degradation Alternative**

Similar to the preferred alternative, the implementation of the preferred alternative has the potential to limit the wildlife strikes at the airport, minimizing damage to aircraft and increase safety for passengers, The project would not be expected to impact the local tax base and property values.

**Non-Degradation Alternative**

Similar to the preferred and minimal degradation alternatives, the implementation of the preferred alternative has the potential to limit the wildlife strikes at the airport, minimizing damage to aircraft and increase safety for passengers, The project would not be expected to impact the local tax base and property values.

**10 (I) SOCIAL AND ECONOMIC BENEFITS LOST****Preferred Alternative**

No jobs or local tax revenue would be lost by constructing the preferred alternative. Further, no decrease in property values will occur as a result of this project. The waters that will be affected by the project are not large enough to sustain a public sport or commercial fishery or primary contact recreation. Additionally, the natural resources are located on private property with restricted access. Therefore, public recreation and tourism, or other use and enjoyment of the resources will not be adversely affected by the project. Therefore, the implementation of the preferred alternative would not result in a loss of social or economic benefits.

**Minimal Degradation Alternative**

Similar to the Preferred Alternative, the minimal degradation alternative would not have an immediate negative impact on existing local business or require and relocations. Consequently, it is expected that there would be no loss of social or economic benefits.

**Non-Degradation Alternative**

The non degradation alternative would not have an immediate negative impact on existing local businesses or require any relocations and would not be expected to result in a loss of social or economic benefits.

**10 (J) ENVIRONMENTAL BENEFITS LOST OR GAINED****Preferred Alternative**

The stream provides habitat for aquatic organisms. However, since this is a small headwater stream with intermittent flow characteristics, it would not be expected to support game fish. The project will impact the stream during construction by increased siltation and direct aquatic habitat destruction. Based on the nature of flowing water, the siltation effects should only be temporary. Habitat destruction will be a permanent impact on the aquatic biota. The mortality of some stream species, particularly those that are sessile organisms, will occur as a result of the proposed impacts. Refuges for the motile displaced species should be available downstream of the proposed impact area. Faunal diversity will be impacted locally, but would be expected to recover; therefore no significant shifts in the composition or diversity of aquatic communities are anticipated as a result of the proposed activities.



**Minimal Degradation Alternative**

This alternative would have less of an impact on environmental benefits. A portion of the stream would be enclosed by an open bottom culvert which allows for aquatic organisms and debris to move through the channel. The open bottom culvert also allows for some natural stream features to be retained.

**Non-Degradation Alternative**

This alternative would have less of an impact on environmental benefits than the preferred and minimal degradation alternatives. Most of the stream would be enclosed by an open bottom culvert which allows for aquatic organisms and debris to move through the channel and allows for some natural stream features to be retained.

**10 (K) MITIGATION TECHNIQUES**

**Preferred Alternative**

Under this alternative, the City of Dayton Department of Aviation would accomplish mitigation at a site located at Englewood MetroPark. This Five Rivers MetroParks site is located within approximately one mile from the airport impact site. This site provides mitigation on a stream of similar size and type (in kind mitigation), and within the Stillwater River watershed. Riparian corridor enhancements will include a combination of honeysuckle removal and replanting with native trees, and adding additional native trees to the understory. This mitigation will provide a mitigation ratio of nearly 1:1 for just the stream preservation, but will also provide a total of 4 acres of riparian corridor enhancements, which will provide even greater water quality benefits than just preservation alone. The mitigation techniques proposed are thoroughly described in the Conceptual Mitigation Plan provided in Appendix D.

**Minimal Degradation Alternative**

Similar to the Preferred Alternative, mitigation would include the conservation and restoration of the same stream for 470 linear feet and 1 acres of riparian corridor enhancements and preservation. This mitigation will provide a mitigation ratio of 1:1.

**Non-Degradation Alternative**

Because the impacts to Stream A under this alternative are minimal, impacts are expected to be covered under a Nationwide Permit. Due to the minor impacts, no mitigation would be required.

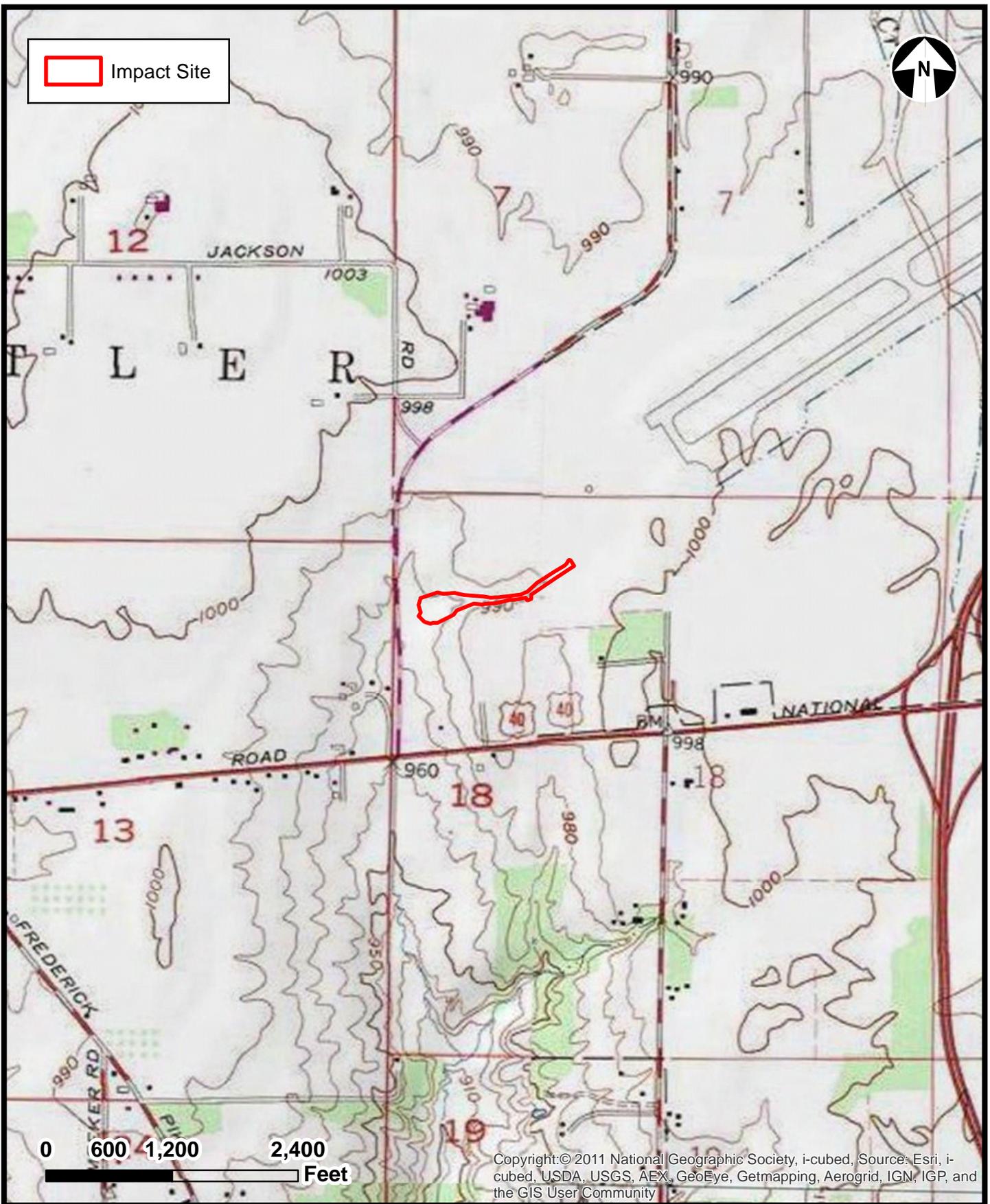
**Table 4: DAY Proposed Mitigation**

Preferred Alternative			Minimum Degradation Alternative			Non-Degradation Alternative		
Impact	Mitigation Ratio	Mitigation	Impact	Mitigation Ratio	Mitigation	Impact	Mitigation Ratio	Mitigation
1,575 lf Stream A	Approx 1:1	1,400 lf stream preservation & 4.0 acres riparian corridor enhancements (preservation & enhancement)	470 lf Stream A	1:1	470 lf & 1 acre riparian corridor enhancements	26 lf Stream A	NA	None





APPENDIX A



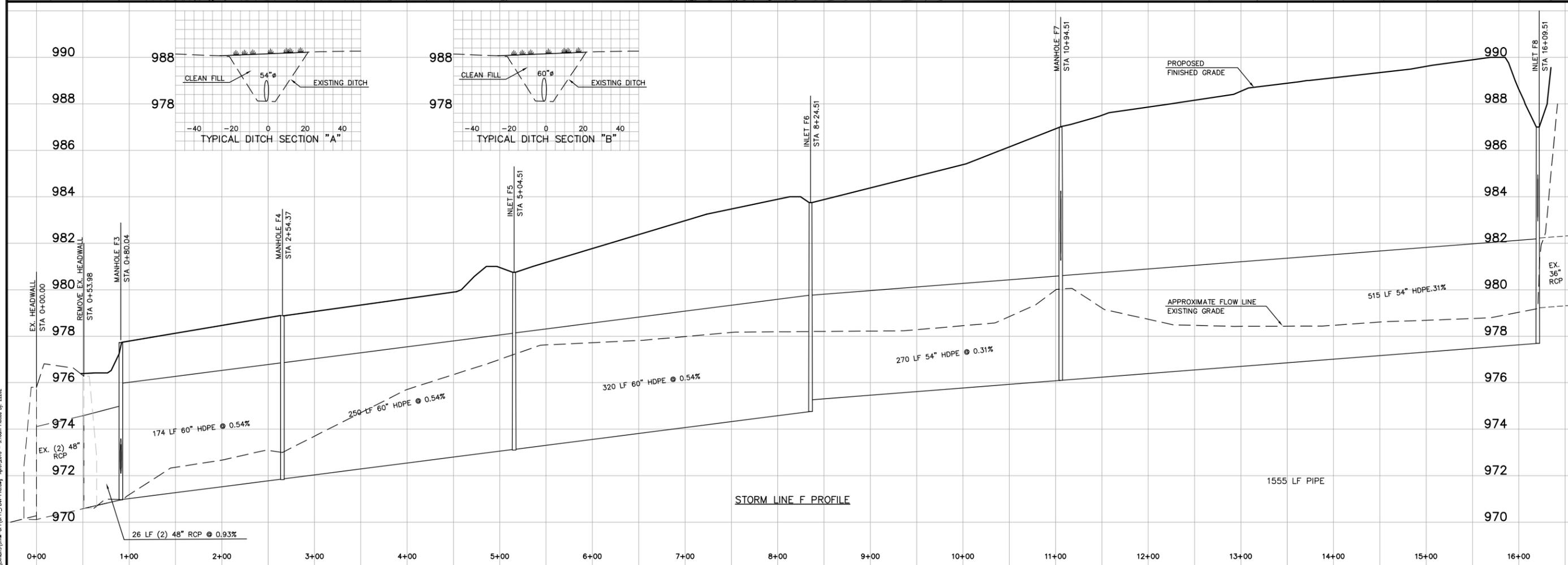
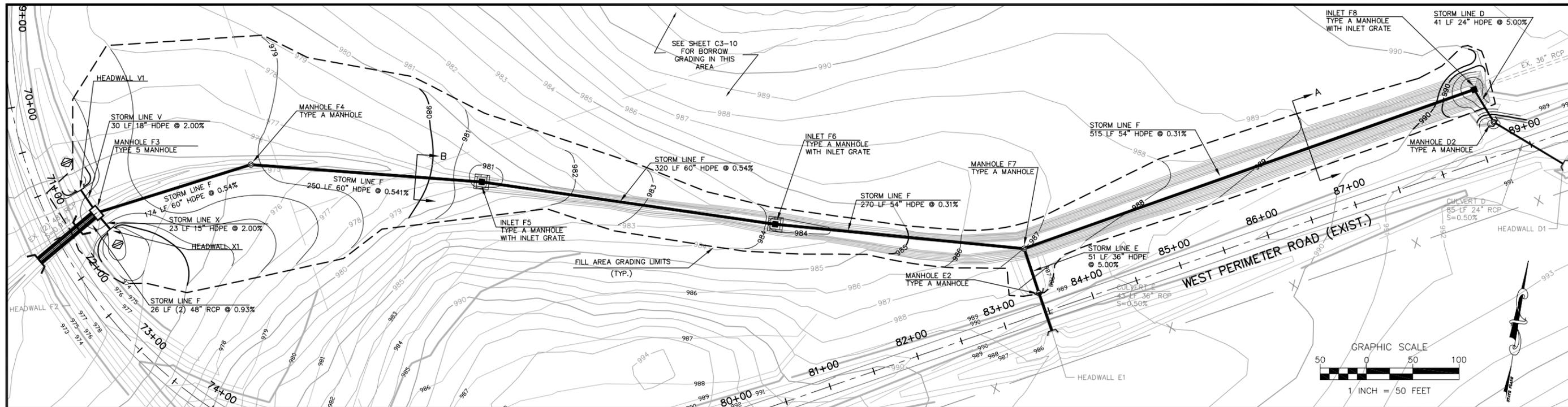
> Dayton International Airport  
USGS Topographic Map- Impact Area





## > Dayton International Airport Aerial Map- Impact Area





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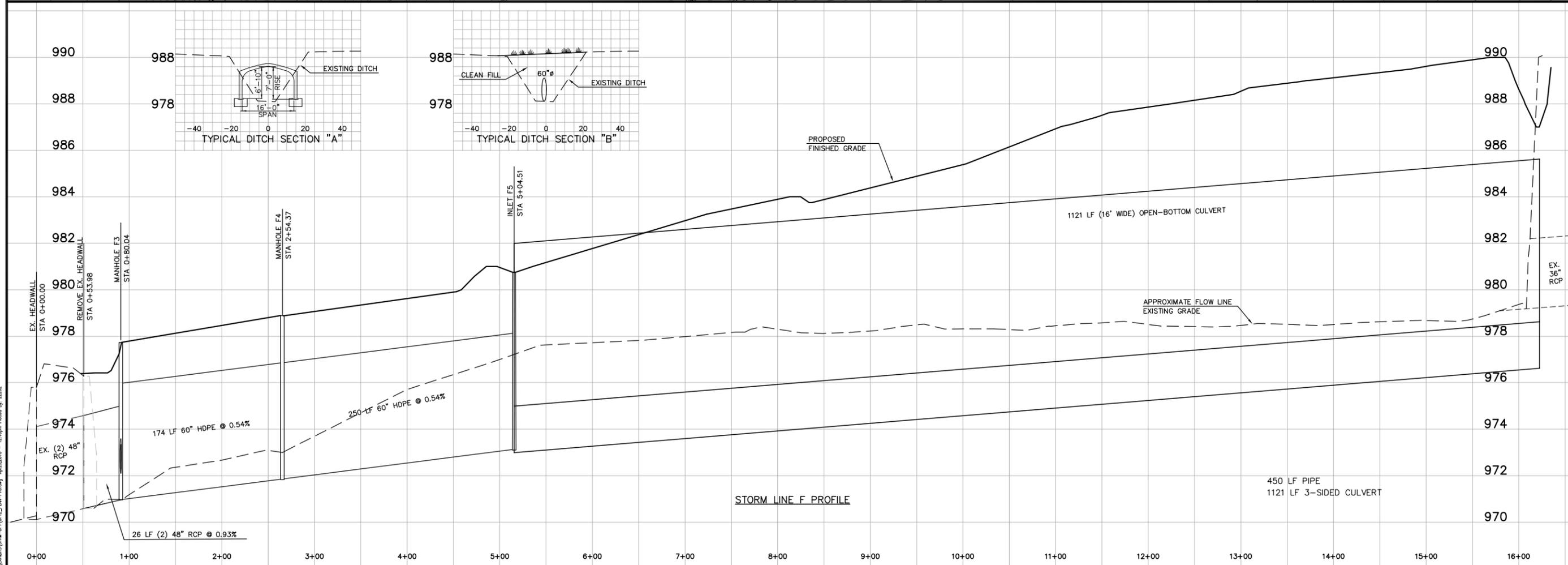
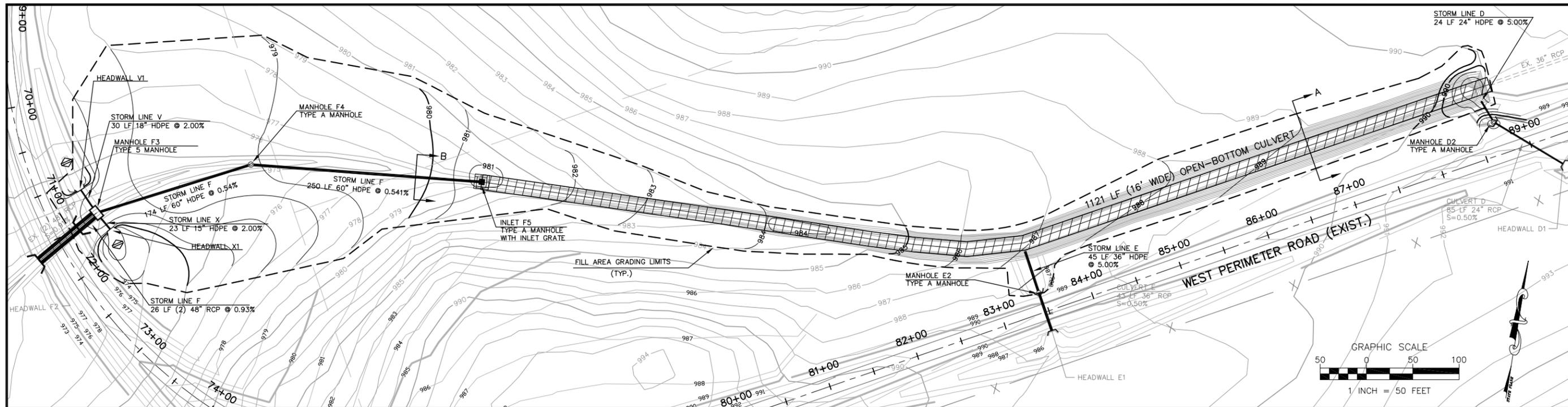


**DAYTON INTERNATIONAL AIRPORT**  
**WEST PERIMETER ROAD - BLAST FENCE TO NORTH CARGO APRON**  
**CONCEPT 1 - PREFERRED ALTERNATIVE**

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DATE: MARCH 2009	APPR. BY: MWF	DRAWING NUMBER: 6A-17192
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ISSUED FOR CONSTRUCTION



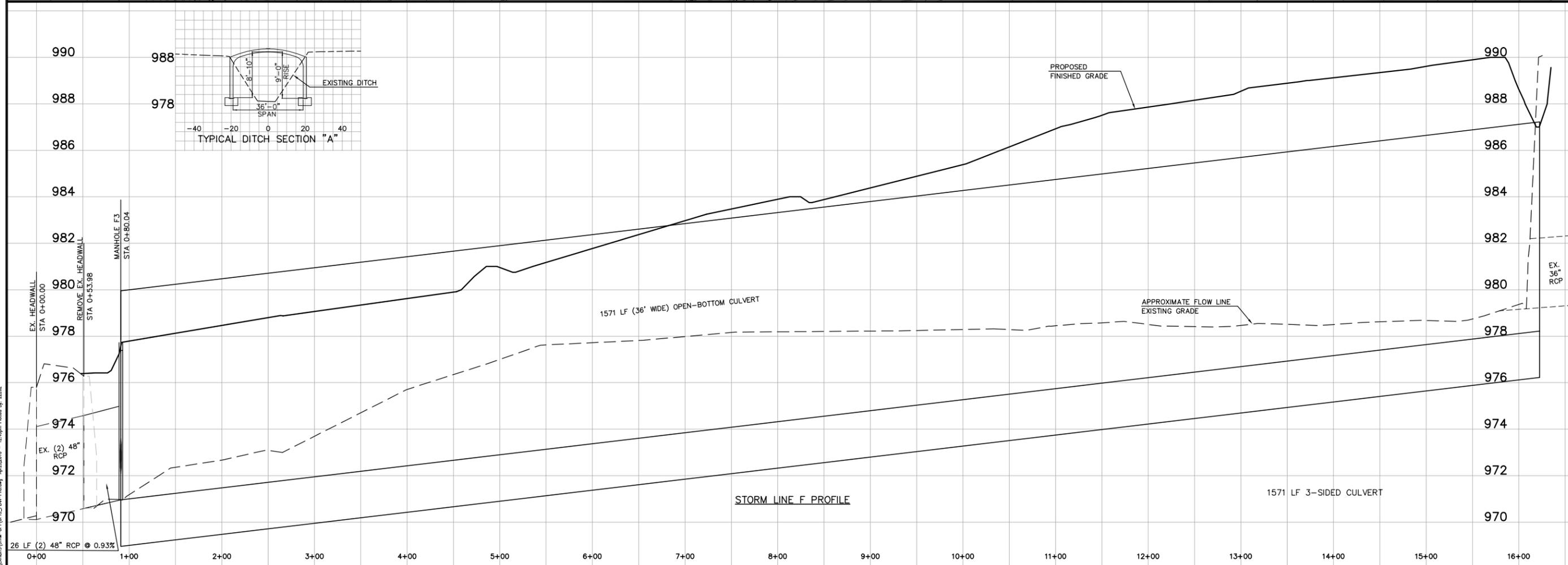
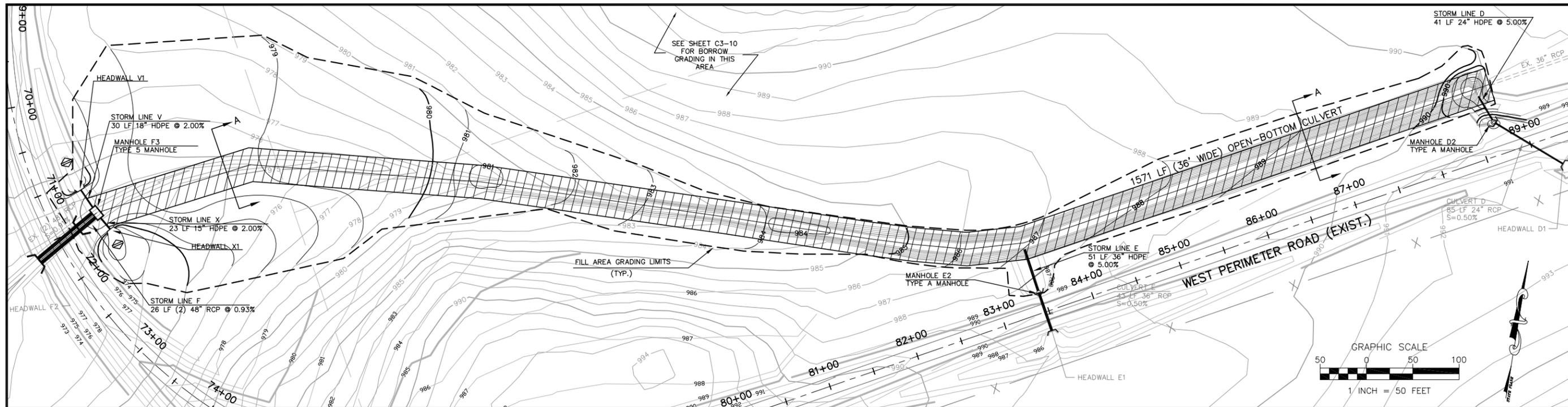
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DATE	REVISION MADE	BY	AUTHORIZED



**DAYTON INTERNATIONAL AIRPORT**  
**WEST PERIMETER ROAD - BLAST FENCE TO NORTH CARGO APRON**  
**CONCEPT 2 - MINIMUM DEGRADATION ALTERNATIVE**

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DATE: MARCH 2009	APPR BY: MWF	DRAWING NUMBER: 6A-17192
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DATE	REVISION MADE	BY	AUTHORIZED



**DAYTON INTERNATIONAL AIRPORT**  
**WEST PERIMETER ROAD - BLAST FENCE TO NORTH CARGO APRON**  
**CONCEPT 3 - NON-DEGRADATION ALTERNATIVE**

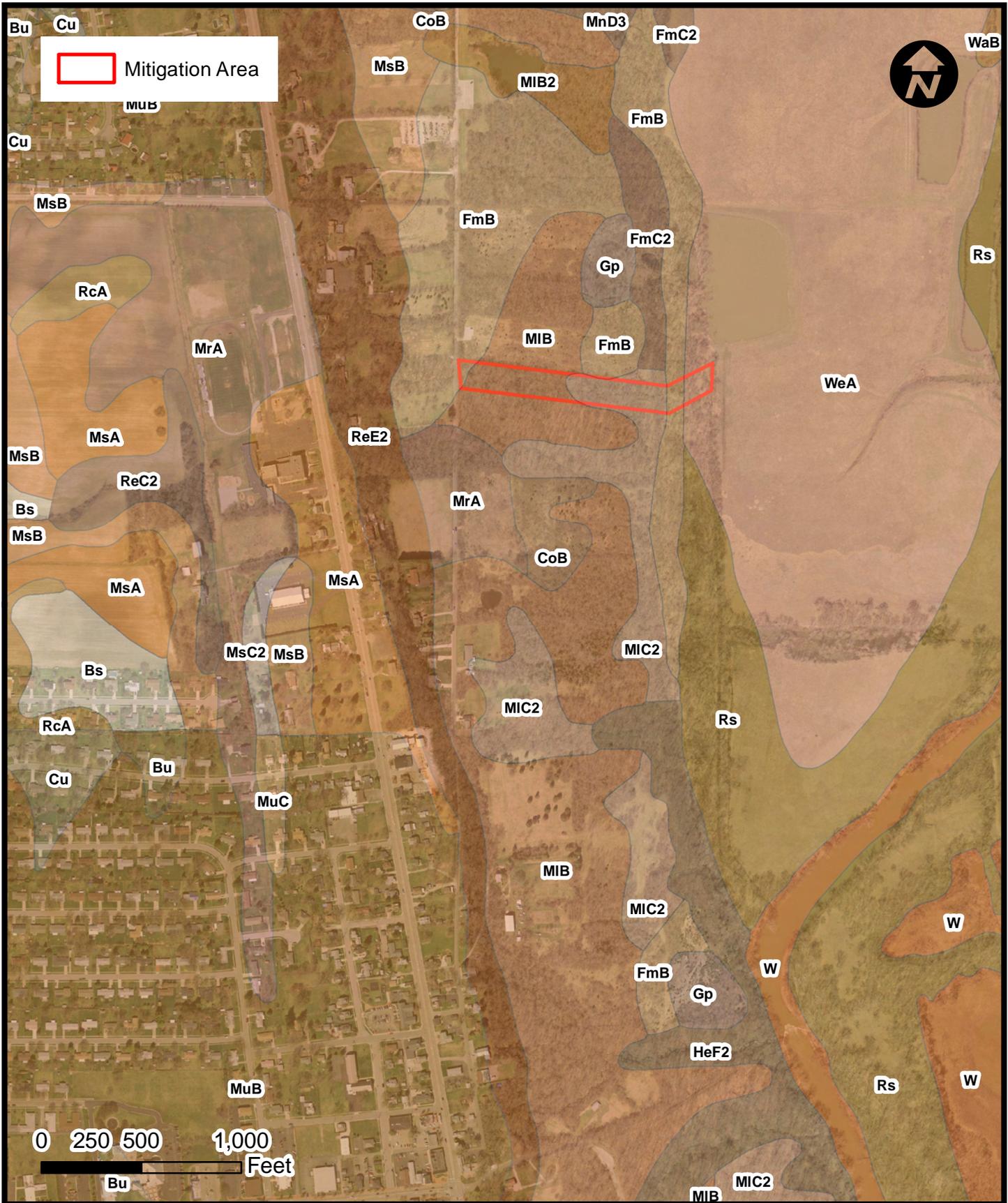
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> Dayton International Airport  
Hydrologic Unit Codes Map- Impact Area





> Dayton International Airport  
NRCS Soil Survey Map





> Dayton International Airport  
National Wetland Inventory Map- Impact Area



# Dayton Airport Unnamed Trib

