ALTERNATIVES ANALYSIS AND CONCEPTUAL SURFACE WATER MITIGATION PLAN

§404 Individual Permit Application
§401 Water Quality Certification Application

For the:
CHESTNUT WOODS SUBDIVISION
PHASES 3 & 4
GREAT OAKS PARKWAY
CITY OF INDEPENDENCE,
CUYAHOGA COUNTY, OHIO

Prepared for:
PERRICO PROPERTY SYSTEMS, LLC
320 ORCHARD VIEW AVENUE
SEVEN HILLS, OHIO 44131

JUNE 2011

engineers | geologists | scientists | planners

Hull & associates, inc.

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§404
Individual Permit Application

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT (33 CFR 325)	OMB APPROVAL NO. 0710-003 Expires October 1996

Public reporting burden for this collection of information is estimated to average 5 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 Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. 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.

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10: 1413, Section 404. Principal Purpose: These laws require authorizing activities in, or affecting, navigable waters of the United States, the discharge or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Routine Uses: Information provided on this form will be used in evaluating the application for a permit. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed 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.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)
Mr. Gene Troiano Perrico Property Systems	Mr. Hugh F. Crowell, PWS Ecological Group Practice Leader
6. APPLICANT'S ADDRESS	9. AGENT'S ADDRESS
Perrico Property Systems 320 Orchard View Avenue Seven Hills, Ohio 44131	Hull & Associates, Inc. 6397 Emerald Parkway, Suite 200 Dublin, Ohio 43016
7. APPLICANT'S PHONE NOs. W/AREA CODE	10. AGENT'S PHONE NOs. W/AREA CODE
a. Residence N/A b. Business 216-524-4414	a. Office 614-793-8777 b. Fax 614-793-9070

11. **STATEMENT OF AUTHORIZATION**

I hereby authorize, Mr. Hugh F. Crowell, PWS 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 DATE

NAME, LOCATION, AND DESCRIPTION OR PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

This project is referred to as Chestnut Woods Subdivision – Phases 3 & 4

13. NAME OF WATERBODIES, IF KNOWN (if applicable)

Unnamed Tributaries (UT) to Cuyahoga River (HUC 04110002)
Unnamed Wetlands (HUC 04110002)

14. PROJECT STREET ADDRESS (if applicable)

N/A

15. LOCATION OF PROJECT

Cuyahoga (COUNTY) Ohio (STATE)

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) **Section, Township, Range, Lat/Lon, and/or Accessor's Parcel Number, for example.**

The project is located near the City of Independence, in Cuyahoga County, Ohio (Appendix A, Figure 1). The center of the project is at Latitude: 41.373588 N and Longitude: -81.658351 W. The northern portion of the proposed development will tie into the existing development on Great Oaks Parkway and extend this roadway to the southern end of the proposed project by connecting to Hillside Road. The overall subdivision is comprised of several Phases of development, Chestnut Woods Subdivision Phases 1, 2, 3, and 4 (Appendix A, Figure 2).

17. DIRECTIONS TO THE SITE

From Buffalo, New York, travel west on Interstate Route (IR) 90 Cleveland Ohio (approximately 170 miles). Take the IR 77 South exit out of downtown Cleveland. Proceed south on IR-77 for approximately 9 miles to Exit 153 (Pleasant Valley Road) toward Independence/Seven Hills. Turn left on E. Pleasant Valley Road (1.7 miles) then right on Broadview Road (0.5 mile), then right on Hillside Road (1.3 miles) and then left on Great Oaks Parkway. The Chestnut Woods subdivision is located north of Hillside Road and east and west of Great Oaks Parkway (Appendix A, Figure 1).

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18. Nature of Activity (Description of project, include all features)

The overall activity for this project involves the development of land for the purpose of constructing single family homes and associated roadways in the City Independence, Cuyahoga County, Ohio (Appendix A, Figures 1 and 3). Activities associated with the development include the clearing and grubbing of land for the purpose of creating sub lots suitable for building single family homes, constructing roads, cul-de-sacs, and installing the necessary infrastructure needed to support a housing development. All development plans were designed to meet the specifications as set forth by the state and local government. The construction methods and sequence of the single family homes will be determined by the builder or the owner of the purchased lot. The activities for the development of Phases 3 and 4 include provisions for 102 lots on 94 acres of land (Appendix A, Figure 3). This project also proposes to create an additional roadway connection between Great Oaks Parkway and the north side of Hillside Road. This connection will be used by current and future residents of Chestnut Woods Subdivision and adjacent residential communities in addition to providing an additional access point for local safety services.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

This project is proposed to satisfy the need and demand of new housing shortages within the southern Cuyahoga County region of northeast Ohio. The intended use of this project is to provide areas for construction of single family homes to meet growing demands for housing in the City of Independence.

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

The site is traversed by numerous long linear wetlands and headwater streams (Appendix B, Tables 1 and 2). Permanent fill will be placed in four of the fifteen jurisdictional wetlands on-site (Wetlands A, B, L, and N) in order to create suitable sublots for the construction of single family homes within the project area (Appendix A, Figures 4A and 4B) (Appendix B, Tables 1 and 3). Of the thirteen streams found on-site (Appendix B, Table 2), all of which are unnamed tributaries to the Cuyahoga River, permanent impacts to three streams (Streams A, C, and F-1) are proposed (Appendix B, Tables 4 and 5). Permanent impacts to these three streams include concrete pipe culverts or 3-sided box culverts (depending on Alternative), to facilitate necessary residential development activities (Appendix A, Figures 5A, 5B, and 5C). Small segments of Streams F-1 and F-2 will be temporarily impacted during construction for the advancement of utilities required for site development (Appendix A, Figure 5D) (Appendix B, Tables 4 and 5). . **Continued: See Exhibit 1**

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

	Area	Fill Volume	Fill Material
Permanent (total for wetland)	0.463 acre	707 cubic yards.	Clean Earthen Fill
Permanent (total for stream)	0.027 acre	22.75 cubic yards	Clean Earthen Fill, gravel and concrete culvert pipe
Temporary (total for stream)	0.0036 acre	3.6 cubic yards (excavated)	

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

The proposed action will affect approximately 0.463 acre of jurisdictional wetlands (Appendix B, Table 3). Additionally, 120 linear feet (0.01 acre) of ephemeral Stream A will be culverted to construct a roadway (Bradford Circle) that ends in a cul-de-sac; 80 linear feet (0.004 acre) of intermittent Stream C will be culverted during the construction of Linden Lane (culvert replacement); and 180 linear feet (0.013 acre) of intermittent Stream F-1 will be culverted by three (3) separate culverts for four (4) private driveway and one (1) maintenance access driveway crossings during the development of sub lots 152 through 155 (Appendix B, Tables 4 and 5). Temporary impacts to intermittent Streams F-1 and F-2 will be impacted to extend utilities to sub lots 163 through 175, thus impacting 30 linear feet (0.003 acre) and 6 linear feet (0.0006 acre) respectively. Total acres of permanent wetland fills amount to 0.463 acre and total acres of permanent stream fills amount to 0.027 acre for a grand total of 0.49 acre of permanent surface water impacts. The utility crossings on Streams F-1 and F-2 total 0.0036 acre of temporary impacts to surface waters on site (Appendix B, Tables 4 and 5).

23. Is Any Portion of the Work Already Complete? Yes __ No X* IF YES, DESCRIBE THE COMPLETED WORK

*Construction activities within Phases 1 and 2 have been authorized via U.S. Army Corps of Engineers Nationwide Permit No. 26 (1997-4940012) and a Level 1 Isolated Wetland Permit from the State of Ohio (SWIMS ID # 113734) was granted on April 21, 2011 to facilitate the construction of the Great Oaks Parkway connection.

24. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list)

See attached Exhibit 2

25. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED
USACE	Nationwide Permit #26	1997-4940012	1997	April 22, 1997
USACE	Unauthorized Fill Restoration	1997-4940012	2010	August 30, 2010
Ohio EPA	Level 1 Isolated Wetland Permit	113734	2011	April 21, 2011

See attached Exhibit 5 (Page 12), also see Appendix G (Exhibits 1, 2, and 3)

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT DATE

SIGNATURE OF AGENT 6/8/11 DATE

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 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

§404 INDIVIDUAL PERMIT APPLICATION

EXHIBIT 1. 404 Application: Block 20: Reason(s) for Discharge

Block 20. Reason(s) for Discharge

Due to the long linear network of natural resource features within the project area, some wetland and stream impacts must occur in order to complete this subdivision (Appendix A, Figure 3). Chestnut Woods subdivision was designed to comply with the rules and regulations as set forth by the City of Independence zoning department while also avoiding as much wetland and stream habitat as possible to comply with the Clean Water Act. Additionally, the extension of Great Oaks Parkway to Hillside Road will provide a public connection to the previous phases of this development, including an alternative access route for safety services within the City of Independence.

The Chestnut Woods subdivision is classified as a single unit development and all streets and cul-de-sacs will conform to the City of Independence Subdivision Regulations. Roadway widths, sidewalks, and cul-de-sacs within this single unit development must meet state and city requirements for widths and diameter to ensure easy passage and turning radii for large vehicles such as school buses and fire equipment. As a component of the Chestnut Woods subdivision, City subdivision and zoning regulations were followed. Within these regulations, set back requirements, site distance allowances, and general development standards are established and must be followed. Consideration of these regulations was given during the planning and development of the subdivision. The site development plan for the Chestnut Woods subdivision meets all county regulations except where variances have already been granted by the City. The clearing, grubbing, and/or grading of land for single family homes, roads, cul-de-sacs, and sidewalks will result in the discharge of fill into a small percentage of the project streams and wetlands on-site. The majority of the streams and wetlands on-site have been avoided through careful development planning.

EXHIBIT 2. 404 Application: Block 24. Addresses of Adjoining Property Owners

Block 24. Addresses of Adjoining Property Owners, Lessees, Etc., whose Property Adjoins the Waterbody.
(Adjacent to the Chestnut Woods Subdivision).

PARCEL #	OWNER	STREET NUMBER	STREET NAME	CITY	STATE	ZIP
55204007	MELVYN D. & CAROLYN T. BECK	6721	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55204008	EMORY WOLF, JR.	6715	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55204019	THOMAS G. WHITBY	6697	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55204020	DONALD P. POWERS	6703	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55204021	RALPH A. BLUHM, JR.	6709	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211070	FRANK A. SHIMA	6823	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211071	NICK SAVIOLIS	6817	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211072	MICHAEL J. KROFTA	6811	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211073	AINA PETERSON MCHUGH	6805	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211074	MARY HARB	6799	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211075	ROBERT J. JANSON	6793	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211076	YARINA ETALL SIRY	6787	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211077	AMBER D. & DAVID K. MOSTOLLER	6781	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211078	DANNY A. & BEVERLY A. WERNER	6775	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211079	ELIZABETH H. CURSCHMAN	6769	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211080	PATRICIA A. WOLF	6763	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211081	MICHAEL & STELLA NIRO	6757	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211082	ELSIE Y. KRALIK	6751	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211083	JOHN W. SCOTT	6745	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211084	FRANK J. EVANS	6739	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211085	RICHARD A. & RENEE SERNY	6733	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
55211086	ROZA MUHVIC	6727	CHERYL ANN DRIVE	SEVEN HILLS	OH	44131
56231015	VICTORIA HUMPAL	6774	OAKWOOD DRIVE	INDEPENDENCE	OH	44131
56231016	BRIAN WHITE & GOMEZ MARIC	6949	GREAT OAKS PARKWAY	INDEPENDENCE	OH	44131
56231017	RICK DUHAN	6775	OAKWOOD DRIVE	INDEPENDENCE	OH	44131

PARCEL #	OWNER	STREET NUMBER	STREET NAME	CITY	STATE	ZIP
56231087	GENE TROIANO	6674	BEECHWOOD DRIVE	INDEPENDENCE	OH	44131
56231088	RAYMOND N. FRITZ	6678	BEECHWOOD DRIVE	INDEPENDENCE	OH	44131
56236002	DALE E. & CAROLYN A. CHERNICK	6669	BEECHWOOD DRIVE	INDEPENDENCE	OH	44131
56236040	DORA A. & WAYNE H. SEVIER	5021	BUTTERNUT RIDGE DRIVE	INDEPENDENCE	OH	44131
56236041	JAMES F. & MICHELE M. SOEDER	4919	BUTTERNUT RIDGE DRIVE	INDEPENDENCE	OH	44131
56236042	ROBERT E. & PATRICIA SEPKOVICH	4900	BUTTERNUT RIDGE DRIVE	INDEPENDENCE	OH	44131
56236053	JOHN DAVID & MARLA STAFFANSON	6820	GREAT OAKS PARKWAY	INDEPENDENCE	OH	44131
56236054	BRIAN & LISA EXL	6832	GREAT OAKS PARKWAY	INDEPENDENCE	OH	44131
56236055	PAUL & JONMARIE SCALES	6844	GREAT OAKS PARKWAY	INDEPENDENCE	OH	44131
56301027	BRIAN AND LISA ADAMS	5335	ARBOR COURT	INDEPENDENCE	OH	44131
56301028	ROBERT P. & KOCINSKI M. ABDOW	5332	ARBOR COURT	INDEPENDENCE	OH	44131
56301029	TIMOTHY & MARGARET TROMBETTA	5324	ARBOR COURT	INDEPENDENCE	OH	44131
56301031	MICHAEL J. & THERES HOWENSTINE	6856	GREAT OAKS PARKWAY	INDEPENDENCE	OH	44131
56301032	JAMES M. & JULIE A. DIGHERO	6868	GREAT OAKS PARKWAY	INDEPENDENCE	OH	44131
56301047	MICHAEL A. & WENDY E. LUEDERS	6901	GREAT OAKS PARKWAY	INDEPENDENCE	OH	44131
56301048	RICHARD M. & DINA GALLOWAY, JR.	6913	GREAT OAKS PARKWAY	INDEPENDENCE	OH	44131
56304007	DAVID AND PATRICIA SNYDERBURN	4653	HILLSIDE DRIVE	INDEPENDENCE	OH	44131
56304012	LAVERNE D. PICHERT	4707	HILLSIDE DRIVE	INDEPENDENCE	OH	44131
56304013	LAVERNE D. PICHERT	4707	HILLSIDE DRIVE	INDEPENDENCE	OH	44131
56304017	PHYLLIS OWSIAK	4603	HILLSIDE DRIVE	INDEPENDENCE	OH	44131
56304026	MARK E. HORVATH	4903	PINE RIDGE OVAL	INDEPENDENCE	OH	44131
56304027	THOMAS E. DAY, JR.	4973	PINE RIDGE OVAL	INDEPENDENCE	OH	44131

PARCEL #	OWNER	STREET NUMBER	STREET NAME	CITY	STATE	ZIP
56304028	CARL LOVANO, JR.	5025	PINE RIDGE OVAL	INDEPENDENCE	OH	44131
56304029	JAMES M. & EILEEN KOSAKOWSKI	5175	PINE RIDGE OVAL	INDEPENDENCE	OH	44131
56304030	SHARON LYNN ROGERS	5225	PINE RIDGE OVAL	INDEPENDENCE	OH	44131
56304031	EDDY H. WRIGHT	5375	PINE RIDGE OVAL	INDEPENDENCE	OH	44131
56304032	RAYMOND D. & JOANNE MOORE, JR.	5383	PINE RIDGE OVAL	INDEPENDENCE	OH	44131
56304080	RANDALL S. GESICKI	7025	S. GREAT OAKS PARKWAY	INDEPENDENCE	OH	44131
56307008	WEST CREEK PRESERVATION COMMITTEE	4500	HILLSIDE DRIVE	INDEPENDENCE	OH	44131
56307020	MARY B. STANLEY	4316	HILLSIDE DRIVE	INDEPENDENCE	OH	44131

§401
Water Quality Certification Application

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._X_ 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 #

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

3. Name and address of applicant:
Perrico Property Systems
Attn: Mr. Gene Troiano
320 Orchard View Avenue
Seven Hills, Ohio 44131

Telephone number during business hours:
(_____) N/A (Residence)
(216) 524-4414 (Office)

3a. Signature of Applicant: Date:

4. Name, address and title of authorized agent:
Mr. Hugh F. Crowell, PWS
Hull & Associates, Inc.
6397 Emerald Parkway, Suite 200
Dublin, Ohio 43016

Telephone number during business hours:
(614) 579-8666 (Cell)
(614) 793-8777 (Office)

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: Date:

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: Continued; see attached Exhibit 3, see also Appendix A, Figure 1

Adjacent to Great Oak Parkway, north of Hillside Road, and east of I-77.
Approximate project center: Latitude: 41.373588 N Longitude: -81.658351 W

Street, Road, Route, and Coordinates, or other descriptive location

HUC 04110002	Cuyahoga	City of Independence	Ohio	44131
Watershed	County	City or Township	State	Zip Code

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

*A Level 1 Isolated Wetland Permit was obtained to impact three isolated wetlands to finish the construction of Great Oak Parkway to connect an earlier phase of this subdivision southward to Hillside Road. See attached subdivision plan (Figure 4).

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
USACE	Nationwide Permit #26	1997-4940012	1997	April 22, 1997
USACE	Unauthorized Fill Restoration	1997-4940012	2010	August 30, 2010
Ohio EPA	Level 1 Isolated Wetland Permit	113734	2011	April 21, 2011

See attached Exhibit 5 (Page 12), also see Appendix G (Exhibits 1, 2, and 3)

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

8a. Activity: Describe the Overall Activity:

The overall activity for this project involves the development of land for the purpose of constructing single family homes and associated roadways and infrastructure in the City of Independence, Cuyahoga County, Ohio (Appendix A, Figures 1 and 3). Activities associated with this project consist of clearing, grubbing, and grading land for the purpose of creating suitable areas for building single family homes and associated roadways.
Continued; see attached Exhibit 6

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

The purpose of this proposed project is to satisfy the need and demand for new housing within Cuyahoga County, Ohio. The intended use of this project is to provide areas suitable for the construction of single family homes and associated roadways to meet growing housing demands within the heart of Cuyahoga County, south of Cleveland.

8c. Discharge of dredged or fill material: Describe type, quantity of dredged material (in cubic yards), and quantity of fill material (in cubic yards). **(OAC 3745-1-05(B)(2)(a))**

The proposed construction of Phases 3 and 4 will necessitate impacting four wetlands, totaling 0.463 acre (Appendix B, Table 3). Wetland impacts will consist of placement of fill material within wetlands considered adjacent to "waters of the U.S.", and will total approximately 707 cubic yards. This proposed project will also necessitate impacting 380 linear feet of stream through the replacement of an existing culvert on one intermittent stream (Stream C) and culverting one section of ephemeral Stream A and culverting three sections of intermittent Stream F-1. A total of 36 linear feet of temporary impacts to intermittent Streams F-1 and F-2 for utility crossings (open cutting) is in addition to the 380 linear feet of permanent stream impact. As proposed, stream impacts will comprise 22.75 cubic yards of fill and covering 0.027 acre of surface area (Appendix B, Table 4). Total proposed fill for wetlands and streams combined is 729.75 cubic yards (0.49 acre) (Appendix B, Table 6).

Continued: See Attached Exhibit 6

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.

Eighteen wetlands were mapped as occurring within Phases 3 and 4, the boundaries of which were verified by USACE Jurisdictional Determination No. 1997-4940012 (Appendix A, Figure 3 - Surface Water Delineation Map) (Appendix G, Agency Correspondence Exhibit 4).

Continued: See Attached Exhibit 7

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). (Application and review requirements appear at **OAC 3745-1-05(B)(2), OAC 3745-1-05(C)(6), OAC 3745-1-05(C)(1) and OAC 3745-1-54)**.

See Attached Exhibit 8

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. **(OAC 3745-1-05(B)(2)(b))**

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. **(OAC 3745-1-05(C)(6)(a, b) and OAC 3745-1-54)**

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.) **(OAC 3745-1-05(C)(6)(h, j-k) and OAC 3745-1-54)**

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. **(OAC 3745-1-05(C)(6)(I))**

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. **(OAC 3745-1-05(B)(2)(g))**

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. **(OAC 3745-01-05(C)(6)(g))**

10g) Describe any impacts on human health and the overall quality and value of the water resource. **(OAC 3745-1-05(C)(6)(c) and OAC 3745-1-54)**

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. **(OAC 3745-1-5(B)(2)(e), and OAC 3745-1-05(C)(6)(I))**

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. **(OAC 3745-1-05(B)(2)(e,f), and OAC 3745-1-05(C)(6)(e))**

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. **(OAC 3745-1-05 (B)(2)(e,f), OAC 3745-1-05 (C)(6)(b) and OAC 3745-1-54)**

10k) Describe mitigation techniques proposed (except for the Non-Degradation Alternative):

" Describe proposed Wetland Mitigation (see **OAC 3745-1-54** and Primer)
" 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	Date	Signature of Agent	
		[signature]	6/2/11

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.

Do not send a certification processing fee with this application. The appropriate fee will be assessed when a certification is issued.

§401 WATER QUALITY CERTIFICATION APPLICATION

EXHIBIT 3: 401 Application: Block 5: Location

5. LOCATION ON LAND WHERE ACTIVITY EXISTS OR IS PROPOSED

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.

The project is located in the City of Independence, in Cuyahoga County, Ohio (Appendix A, Figure 1). The center of the Phase 3 and 4 portion of this development is approximately: 41.373588 N latitude and -81.658351 W longitude (coordinates were obtained from Google Maps). The northern portion of the proposed development will tie into the existing development on Great Oaks Parkway and extend this roadway to the southern end of the proposed project by connecting to Hillside Road. The overall subdivision is comprised of several Phases of development, Chestnut Woods Subdivision Phases 1, 2, 3, and 4 (Appendix A, Figure 2).

EXHIBIT 4: 401 Application: Block 6: Any Portion of the Activity Complete?

6. ANY PORTION OF THE ACTIVITY COMPLETE?

Is any portion of the activity for which authorization is sought complete?

Department of the Army Section 404 Permit #26 (Processing No. 1997-4940012) was issued April 22, 1997 and Ohio EPA Level 1 Isolated Wetland Permit (SWIMS ID No. 113734) was issued April 21, 2011, authorizing impacts to 0.206 acre of isolated wetland within Phase 3 (Appendix G, Agency Correspondence 1 and 3). Construction activities associated with Phase 4 have not been initiated; authorization for such activities is sought in this joint permit application.

EXHIBIT 5: 401 Application: Block 7: Approvals, Certifications, or Denials

7. PERMITS, APPROVALS/DENIALS, CERTIFICATIONS ALREADY RECEIVED

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.

Due to the subdivision rule applied to phased residential development, the proposed impacts must be viewed cumulatively with the previously authorized impacts incurred during Phases 1 and 2, thus the current Nationwide Permit thresholds have previously been exceeded, hence the need for a Section 404 Individual Permit requiring Section 401 Water Quality Certification.

Department of the Army Section 404 Permit #26 (Processing No. 1997-4940012) was issued April 22, 1997 with a granted extension until January, 21, 1998 to fill 0.827 acre of wetland and 975 linear feet of stream. Note the applicant had only filled 0.729 acres of wetlands and 0.098 acre of headwaters streams on the property under this permit to develop residential housing. In addition, an Ohio EPA Level 1 Isolated Wetland Permit (SWIMS ID No. 113734) was issued April 21, 2011, authorizing impacts to 0.206 acre of isolated Wetlands K, R, and Q within Phase 3 (Appendix G, Agency Correspondence Exhibits 1 and 3). Additionally, approximately 0.02 acre of unauthorized fill was accidentally placed in a small portion of Wetland M in approximately 2003-2004. Wetland M is a non-isolated wetland which has since been restored to pre-impact conditions (see attached letter from USACE No. 1997-4940012) per an approved restoration plan. No impacts to Wetland M are proposed. (Appendix G, Agency Correspondence Exhibit 2).

The project area is presently zoned Residential in the City of Independence and is permitted for single family and multi-family use. The City of Independence adopted Riparian and Wetland setback requirements for new development within the city in 2003. This project will comply with these setback requirements by maintaining vegetated buffers around all watercourses and wetlands to the maximum extent practicable. In areas where encroachment upon these buffers is necessary for practicable development, a variance from the City of Independence will be sought and obtained prior to construction.

EXHIBIT 6: 401 Applicatoin: Block 8: Description of the Activity

8. DESCRIPTION OF THE ACTIVITY

8a. Describe the Overall Activity

Continued: The overall activity for this project involves the development of land for the purpose of constructing single family homes and associated roadways and sidewalks in the City Independence, Cuyahoga County, Ohio (Appendix A, Figures 1 and 3). Activities associated with this development include the clearing and grubbing of land for the purpose of creating sub lots suitable for building single family homes, constructing roads, sidewalks, cul-de-sacs, and installing the necessary infrastructure needed to support a housing development. All development plans were designed to meet the specifications as set forth by state and local government. The construction details of the single family homes will be determined by the builder and/or the owner of the purchased lot, however, the builder will comply with city setback requirements in regards to the placement of each individual home in relation to the roads, sidewalks, adjacent homes, and rear lot requirements. This project also proposes to finish a vital roadway connection between Great Oaks Parkway on the north side to Hillside Road. Currently, the roadway alignment consists of a cleared roadway corridor with a single lane paved asphalt and gravel drive that was permitted and constructed during Phases 1 and 2 and is used as a construction access road.

Land use within the project area consists of fallow field habitat, open disturbed land, mixed hardwood forest habitat, and forested and non-forested riparian and wetland areas. A surface water delineation of the site revealed a total of 3 isolated wetlands comprising 0.206 acre, 15 non-isolated wetlands comprising 4.888 acres (Appendix B, Table 1), and 13 streams comprising 14,901.6 linear feet (Appendix B, Table 2) (Hull, 2010). The proposed project consists of finishing the 174 sub lot residential subdivision development by completing Phases 3 and 4 (comprised of 102 proposed sub lots) with one main road (Great Oaks Parkway) and three side streets ending in cul-de-sacs and extending South Great Oaks Parkway northward and ending in a cul-de-sac. The total area of the development is approximately 138 acres, of which 94 acres comprises the new Phase 3 and 4 areas for the purpose of constructing single family homes (Phases 1 and 2 were started in the late 1990's and 64 of the available 70 sub lots have been developed since; however all of the lots are currently sold). This project is proposed as a single family unit development and incorporates open space preservation and adequate storm water management facilities.

The proposed construction of Phases 3 and 4 will necessitate impacting four non-isolated jurisdictional wetlands on-site for a total of 0.463 acre. Wetland impacts will consist of the discharge of fill material into wetlands during the final construction of Great Oaks Parkway and Linden Lane as well as minor impacts to wetlands to facilitate lot development. Impacts to wetlands will occur during final grading along the roadway following infrastructure improvements and future development of sub lots 146-147, 151-155, and sub lots 109 and 114. Fill material will originate from clean earthen material generated from on-site during construction activities. No dredging of material is anticipated within the wetlands on-site. Wetland fills are proposed for non-isolated Wetlands A, B, L, and N totaling 0.463 acre (Appendix B, Tables 1 and 3).

Additionally, three headwater streams will be permanently impacted to construct Bradford Circle, Linden Lane; and four (4) private driveway crossings during the development of sub lots 152 through 155 (Appendix B, Tables 4 and 5). Temporary impacts to two intermittent streams will be necessary to extend utilities to sub lots 162 through 174.

8c. Discharge of Dredged or Fill Material

Continued: The following is a summarization of the *proposed* impacts associated with the proposed construction of Phases 3 and 4 of the Chestnut Woods subdivision (Appendix B, Tables 3 and 4):

The proposed action will affect 0.463 acre of jurisdictional wetlands amounting in 707 cubic yards of fill material (Appendix B, Table 3). Additionally, 380 linear feet of permanent stream impacts are proposed consisting of 120 linear feet (0.01 acre (6.85 cubic yards)) of ephemeral Stream A which will be culverted to construct a roadway (Bradford Circle) that ends in a cul-de-sac; 80 linear feet (0.004 acre (4.41 cubic yards)) of intermittent Stream C will be impacted during replacement of an existing undersized culvert to facilitate the construction of Linden Lane; and 180 total linear feet (0.013 acre (11.49 cubic yards)) of intermittent Stream F-1 will be culverted by three (3) culverts for four (4) private driveway crossings and one maintenance crossing during the development of sub lots 152 through 155 and a stormwater basin (Appendix B, Table 4). Temporary impacts to intermittent Streams F-1 and F-2 will be impacted to extend utilities to sub lots 152 through 155 and 162 through 174, thus temporarily impacting 36 linear feet (0.0036 acre (3.6 cubic yards)) in total extent (Appendix B, Table 4). Total acres of permanent wetland fills amount to 0.463 acre (707 cubic yards) and total acres of permanent stream fills amount to 0.027 acre (22.75 cubic yards) for a grand total of 0.490 acre of permanent surface water impacts and 729.75 cubic yards of fill material in site surface waters (Appendix B, Table 6). The temporary impacts to Streams F-1 and F-2 total 0.0036 acre of temporary impacts to surface waters on site.

- **Summary of Proposed Fill Material Discharge Totals (Phase 3 and 4) for the Preferred Alternative**:
  - ***Wetland***: 707 cubic yards, 0.463 acre.
  - ***Stream*:** 22.75 cubic yards, 0.027 acre, 380 linear feet.
  - **Total**: 729.75 total cubic yards, 0.490 acre of surface water impacts.

EXHIBIT 7: 401 Application: Block 9: Location of Surface Waters and their Names

9. LOCATION OF SURFACE WATERS AND THEIR NAMES

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.

Continued: Phases 1 and 2 of this subdivision have previously been authorized under a Nationwide Permit issued in 1997 (USACE Permit No. 1997-4940012). Wetland and Stream identifiers used in this application are consistent with those used in association with the current Jurisdictional Determination (Appendix G, Agency Correspondence Exhibit 4). The USACE determined the jurisdictional status (adjacency) of eighteen (18) wetlands and thirteen (13) streams within Phases 3 and 4. Wetlands K, Q, and R were determined to be isolated, non-navigable intrastate waters, totaling 0.206 acre (Appendix A, Figure 3). The remaining fifteen (15) wetlands (Wetlands A through J and Wetlands L through P) were determined to be non-isolated, or adjacent, and part of a surface water tributary system to a navigable water (Cuyahoga River), totaling 4.888 acres (Appendix A, Figure 3). All non-isolated wetlands on site (Wetlands A through J and Wetlands L through P) are located within the Cuyahoga River watershed (HUC 04110002), most of which abut one of the 13 streams identified on site (see below for stream information). There are no known lakes, wellheads, or water intakes with a known connection to the surface waters on this site.

Wetlands A, B, and C abut Stream F-1; Wetlands D and E abut Stream F-2. Wetland F is adjacent to Stream D-3; Wetland G abuts Stream D-2 and is also adjacent to Stream D-3; and Wetland H abuts Streams D-1, D-2, and D-4. Wetland I is adjacent to Stream E, while Wetland O abuts Stream E; Wetland J abuts Stream G; and Wetlands L, M, and P are abutting Stream C. Wetland N abuts Stream A and is adjacent to Stream A-1 (Appendix B, Table 1).

Thirteen (13) ephemeral, intermittent, and perennial stream segments were identified on site and comprise 14,901 linear feet within the proposed project area. All streams within the proposed project area are unnamed tributaries to the Cuyahoga River. Stream B is the main stem of an unnamed tributary that drains the site to the Cuyahoga River. Stream B traverses the northern boundary of this site for 2,202.7 feet and flows approximately 2.3 miles east to the Cuyahoga River. The remaining streams on-site are unnamed tributaries to Stream B, most of which connect to Stream B a considerable distance downstream and off-site. Stream A flows northeast across the property for 1,815.4 feet before connecting to Stream B on-site; Stream A-1 flows north for 55.4 feet and connects to Stream A; Stream C flows 3,291 feet in a northeast direction on-site and then another 439 feet north off-site to where it connects to Stream B (off-site); Stream C-1 is 124 feet on-site and flows north into Stream C. Stream D-3 (254.2 linear feet on-site) flows north into Stream D-2 (635.5 linear feet on-site); Stream D-1 flows 594.3 feet eastward into Stream D-2. Stream D-2 and Stream D-4 (561.5 feet) converge to form the beginning of Stream E, which flows 2,197.3 linear feet northeast across the central portion of the site to the eastern property boundary, where it connects to Stream B approximately 4,170 feet downstream of the subject property to the east off-site. The distance to the Cuyahoga River from where Stream E and Stream B converge off-site, is an additional 1.32 miles. Stream F-1 (1,622 linear feet) and Stream F-2 (857.3 linear

feet) flow northeast and converge on-site to form Stream G (691 linear feet). Outside of the project area boundary, Stream G flows north along the I-77 right-of-way for approximately 320 linear feet off-site to Stream E, which from this point is 2.11 miles from the Cuyahoga River (Appendix B, Table 2).

EXHIBIT 8: 401 Application: Block 10: Alternatives Analysis

10. ALTERNATIVES ANALYSIS

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). (Application and review requirements appear at ***OAC 3745-1-05(B)(2), OAC 3745-1-05(C)(6), OAC 3745-1-05(C)(1) and OAC 3745-1-54)****.*

10a. PROJECT DESCRIPTION

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. ***(OAC 3745-1-05(B)(2)(b))***

The proposed project includes provisions for the development of 102 lots suited for the construction of single family homes in addition to associated infrastructure, including roadways, utilities, building setbacks, riparian and wetland setbacks, and stormwater management (Appendix A, Figure 4). The proposed project consists of finishing the 174 sub lot residential subdivision development by completing Phases 3 and 4 (comprised of 102 proposed lots) with one main road (Great Oaks Parkway) and three side streets ending in cul-de-sacs and extending South Great Oaks Parkway northward and ending in a cul-de-sac. The total area of the entire Chestnut Woods Subdivision development is approximately 138 acres, of which 94 acres comprises the new Phase 3 and 4 areas for the purpose of constructing single family homes (Phases 1 and 2 were started in the late 1990's and 64 of the 70 available sub lots have since been developed and the remaining 6 lots have since been sold and will soon be under development). This project is proposed as a single family unit development and incorporates open space preservation and adequate storm water management facilities.

Overall, this subdivision plan avoids the majority of wetlands and streams found throughout the site. Great care was taken during the planning stage to avoid wetland and stream impacts to the greatest extent possible and where impacts to these resources couldn't be avoided, design steps were taken such that the impacts were minimized wherever possible. Therefore, the difference between the Preferred and Minimal Degradation Alternatives is slight and involves the reduction in the total amount of permanent stream impacts between alternatives (Appendix C, Preferred and Minimal Degradation Alternative Stream F-1 Impacts).

The proposed construction of Phases 3 and 4 will necessitate impacting four non-isolated jurisdictional wetlands on-site for a total of 0.463 acre. Wetland impacts will consist of the discharge of fill material into Wetland L during the final construction of Linden Lane; Wetland A and Wetland B during final grading for development of sub lots 146-147 (Wetland A) and 151 (Wetland B), as well as wetland impacts to Wetland B during driveway construction on sub lots 152-155 and the maintenance access road to the storm water basin; and Wetland N during final grading behind sub lots 109 and 114. Fill material will originate from clean earthen material generated from on-site during construction activities. No dredging of material is anticipated within the wetlands on-site.

Wetland fills are proposed for non-isolated Wetlands A, B, L, and N totaling 0.463 acre (Appendix B, Table 3) and the total amount is the same for both the Preferred Alternative and Minimal Degradation Alternative (Appendix D, Photographs 1 through 8). Stream impacts will differ by Alternative and are described below (Appendix B, Tables 4 and 5) (Appendix D, Photographs 9 through 16).

10a-1. Preferred Alternative

The Preferred Alternative will necessitate impacting four non-isolated jurisdictional wetlands on-site for a total of 0.463 acre. Wetland impacts will consist of the discharge of fill material into wetlands during the development of sub lots 146-147 (Wetland A) and sub lots 151-155 (Wetland B) (Appendix A, Figure 4A); during the construction of Linden Lane (Wetland L) (Appendix A, Figure 4B); and during final grading adjacent to sub lots 109 and 114 (Wetland N) (Appendix A, Figure 4B). Fill material will originate from clean earthen material generated from on-site during construction activities. No dredging of material is anticipated within the wetlands on-site. Wetland fills are proposed for non-isolated Wetlands A, B, L, and N totaling 0.463 acre (Appendix B, Table 3). Each of these wetlands is considered non-isolated, or adjacent, and therefore federally jurisdictional (Appendix G, Agency Correspondence Exhibit 4).

Stream impacts will result during construction of the Bradford Circle roadway crossing (Stream A) in the northwest portion of the site; the construction of the Linden Lane roadway crossing (Stream C) in the west central portion of the site, and the construction of three (3) driveway crossings over Stream F-1 on sub lots 152-155 in the south central portion of the site (Appendix A, Figures 5A, 5B, and 5C; Appendix C, Plan 1A). The design for the Preferred Alternative proposes to impact 120 linear feet of Stream A (30 inch diameter culvert) to construct Bradford Circle to facilitate the development of sub lots 93 through 109; and impact 80 linear feet of Stream C (24 inch diameter culvert) during the replacement of an existing undersized culvert for the Linden Lane crossing to facilitate the construction of sub lots 89-92 and 110-125 (Appendix A, Figure 5B). The majority of the impacts to Stream C will occur on a segment that is currently enclosed in an existing culvert, thus overall impacts to Stream C have been reduced by planning the proposed crossing at the same location of an existing structure (Appendix A, Figure 5B). The Preferred Alternative proposes to impact Stream F-1 with three (3) culverts for four (4) driveway crossings to sub lots 152, 153, 154, and 155, and a maintenance access drive north of sub lot 155 by installing three culverts (40 linear feet, 70 linear feet, and 70 linear feet). Each concrete culvert will be 24 inches in diameter and driveways have been paired up where possible to further reduce the total amount of surface water impact instead of an earlier plan to have one culvert at each driveway crossing (Appendix A, Figure 5C). The total amount of permanent fill in these three stream crossings (Stream F-1) equates to 180 linear feet of fill (0.013 acre), including wing/head walls on the inlet and rock channel protection on the outlet (Appendix B, Table 4). Typical culvert details (cross section and plan view) for the Preferred Alternative are included in Appendix C, Plan 1A and Plan 1B. In addition, temporary impacts to Streams F-1 and F-2 for utility crossings will result in 30 linear feet (0.003 acre) to Stream F-1 and 6 linear feet (0.0006 acre) to Stream F-2 (Appendix A, Figure 5D).

10a-2. Minimal Degradation Alternative

The Minimal Degradation Alternative will necessitate impacting four non-isolated jurisdictional wetlands on-site for a total of 0.463 acre, exactly the same as the Preferred Alternative. Wetland impacts will consist of the discharge of fill material into wetlands during the development of sub lots 146-147 (Wetland A) and sub lots 151-155 (Wetland B) (Appendix A, Figure 4A); during the construction of Linden Lane (Wetland L) (Appendix A, Figure 4B); and during final grading adjacent to sub lots 109 and 114 (Wetland N) (Appendix A, Figure 4B). Fill material will originate from clean earthen material generated from on-site during construction activities. No dredging of material is anticipated within the wetlands on-site. Wetland fills are proposed for non-isolated Wetlands A, B, L, and N totaling 0.463 acre (Appendix B, Table 3). Each of these wetlands is considered non-isolated, or adjacent, and therefore federally jurisdictional (Appendix G, Agency Correspondence Exhibit 4).

No permanent stream impacts will result during construction of this proposed project under the Minimal Degradation Alternative. The Bradford Circle roadway crossing (Stream A) in the northwest portion of the site will avoid impacts to Stream A by utilizing a 120 linear foot long by 5.1 foot wide 3-sided box culvert which will avoid the Ordinary High Water Mark (OHWM) (Appendix A, Figure 5A; Appendix C, Plan 2A); the construction of the Linden Lane roadway crossing (Stream C) in the west central portion of the site will avoid impacts to Stream C by utilizing a 80 linear foot long by 5.1 foot wide 3-sided box culvert which will replace an existing undersized culvert and will be constructed wider than OHWM upstream and downstream of the existing culvert (Appendix A, Figure 5B; Appendix C, Plan 2B); and the construction of three (3) 3-sided box culverts (30, 48, and 48 linear feet each by 5.1 feet wide) for four (4) individual driveway crossings and one (1) maintenance access driveway over Stream F-1 on sub lots 152-155 in the south central portion of the site will avoid impacts to Stream F-1 by spanning the OHWM (Appendix A, Figure 5C; Appendix C, Plan 2C). Any temporary impacts to Stream C will occur on a segment that is currently enclosed in an existing culvert, thus permanent impacts to Stream C have been avoided by planning this crossing in the same location of an existing culvert and restoring the streambed to this portion of Stream C during construction of the 3-sided box culvert (Appendix A, Figure 5B). The Minimal Degradation Alternative proposes to avoid impacts to Stream F-1 by constructing 3-sided box culverts with footers located outside of the OHWM and pairing the crossings together to the greatest extent practicable to reduce the number of structures over the stream. **The only difference between the Preferred Alternative and the Minimal Degradation Alternative is the use of 3-sided box culverts at stream crossings instead of concrete culverts; thus the Minimal Degradation Alternative demonstrates a reduction of 380 linear feet of permanent stream impacts** (Appendix B, Table 5). Typical 3-sided box crossing details (cross section and plan/profile) for the Minimal Degradation Alternative are included in Appendix C, Plans 2A-2C. In addition, temporary impacts to Stream F-1 and F-2 for utility crossings will result in 30 linear feet (0.003 acre) to Stream F-1 and 6 linear feet (0.0006 acre) to Stream F-2 (Appendix A, Figure 5D).

10a-3. Non-Degradation Alternative

Due to the location and configuration of the streams and wetlands on-site, coupled with roadway and development design criteria, the proposed project is not feasible or justifiable without minor impacts to these resources. Therefore, the Non-Degradation Alternative plan is presented as a scaled back alternative which avoids all stream crossings and wetland impacts. As a result, the applicant would lose a total of 57 sub lots of the 102 sub lots proposed for the Preferred and Minimal Degradation Alternatives (Appendix A, Figure 6). The Non-Degradation Alternative would entail a severely scaled back development plan to fully avoid wetland and stream impacts. Avoiding stream crossings to Stream A and Stream C would result in a loss of sub lots 89-125 (37 sub lots) and to avoid wetland impacts, sub lots 146-147 and 151-155 would be lost (7 sub lots). In addition, the temporary utility crossing of Stream F-1 and Stream F-2 would be eliminated, thus the sub lots in the southeast corner of the development (sub lots 162-174) couldn't be developed, thus losing 13 additional potential sub lots. While no new impacts to the surface water resources would occur within the project area, the Non-Degradation Alternative does not meet the project purpose or need and is not cost effective.

10b. IMPACTS ON WATER QUALITY AND AQUATIC LIFE BY ALTERNATIVE

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. ***(OAC 3745-1-05(C)(6)(a, b) and OAC 3745-1-54)***

Land use within the project area consists of open disturbed land, mixed hardwood forest habitat, fallow field habitat, and forested and non-forested riparian and wetland areas traversing diagonally through the site (Appendix A, Figure 3). In general, the plant and animal species within the Chestnut Woods subdivision project area are considered typical for the northeast Ohio region. These habitats as well as known and/or observed animal species on-site are very common within the region and have adapted to the surrounding urban environment; therefore the magnitude of impact to animal life is expected to be relatively low for this project. This alternative is not expected to affect important sport or recreational fish species. Plant life will be affected by the proposed construction due to the clearing and grubbing activities associated with land preparation. These activities are expected to have a relatively low magnitude of ecological impact due to this environmentally friendly type of planned development which limits the impacts to the upland areas and preserves the great majority of regulated wetlands and streams on site including locally-mandated riparian and wetland buffer areas. Thus, the highest quality habitat on-site will not be disturbed and will be protected in perpetuity by local set back requirements/regulations and easements. An approved wetland delineation report is not included with this application; however, letters from the USACE and Ohio EPA verifying the jurisdictional boundaries of the surface waters and category/class of wetlands and streams are included in Appendix G (Agency Correspondence Exhibits 4 and 5).

The U.S. Fish and Wildlife Service's (USFWS) *Federally-Listed Species by Ohio Counties, January 2011* list (USFWS, 2011; Appendix G, Exhibit 6) was reviewed for potential occurrences of federally-listed plant and animal species, or designated critical habitats within the project area. According to this list, Cuyahoga County is included in the range of three federally-listed threatened or endangered species, the endangered **Indiana bat** (*Myotis sodalis*), the endangered **Kirtland's warbler** (*Dendroica kirtlandii*), and the endangered **piping plover** (*Charadrius melodus*) (Appendix G, Exhibit 6). The **bald eagle** (*Haliaeetus leucocephalus*) is listed as species of special concern within Cuyahoga County. The Kirtland's warbler was recently added to the updated list maintained by the USFWS; hence, earlier correspondence with the USFWS did not include this species for Cuyahoga County (Appendix G, Agency Correspondence Exhibit 7).

According to the USFWS, **Indiana bats** hibernate during winter in caves and abandoned mines, often along with many other species of bats (USFWS, 2006). Areas in caves that are suitable for hibernation are draft free and have a constant winter temperature. After hibernation, Indiana bats migrate to their summer habitats. Based on trap and release studies, suitable summer (roosting and brood-rearing) habitat for the Indiana bat is living or standing dead trees or snags with exfoliating, peeling or loose bark, split trunks and/or branches, or cavities. There appears to be no tree size threshold, and both lowland and upland locations may be utilized. This development is within the known range of the Indiana bat; however, an Indiana Bat Survey conducted on site was negative for the Indiana bat. This survey included a mist net survey and was conducted in August of 2010 by EnviroScience, Inc. and coordinated with the USFWS (ES, 2010). Any unavoidable cutting of the trees with suitable roosting and brood rearing habitat for the Indiana bat (living or standing dead trees or snags with exfoliating, peeling or loose bark, split trunks and/or branches, or cavities) will be performed only after September 30th or prior to April 1st when species would not be using such habitat.

The first **Kirtland's warbler** in North America was identified in 1851 from a specimen collected on Dr. Jared Kirtland's farm near Cleveland, Ohio. Biologists did not learn where it nested until 1903 when they found a warbler nest in northern lower Michigan. Today, Kirtland's warblers face two significant threats: lack of crucial young jack pine (*Pinus banksiana*) forest habitat and the parasitic brown-headed cowbird (*Molothrus ater*) (USFWS, 2010). They require large dense stands of jack pine where they nest on the ground under the thick shrubby pine trees. Northern Michigan, Wisconsin, and Canada have the only records for breeding Kirtland's warblers.

While there are no nesting records for the Kirtland's warbler in Ohio, this neotropical migrant passes through Ohio and the south shore of Lake Erie (northern Ohio Counties bordering Lake Erie) provide critical resting areas during migration across Lake Erie. The northern coast of Cuyahoga County is approximately 10.7 miles north of this proposed project. Therefore, this project should have no impacts on the Kirtland's warbler since the breeding habitat and coastal resting habitat does not occur near or within either Phase of this development.

The Ohio breeding habitat for the **piping plover** occurs in a few locations along the Great Lakes (USFWS, 2003). Piping plovers migrate from the southeast Atlantic coast line to north breeding habitats during late February to early April. Habitat used during the breeding period consists of sand beaches, lakeshores, and dunes for Ohio. Nests

are built above high tide and foraging areas coincide with nesting areas. Southward migration to wintering habitat occurs from late July through September. The critical habitat designation in Cuyahoga County for the piping plover occurs along the shores of Lake Erie approximately 10.7 miles north of the proposed project area. This project should have no impacts on the piping plover since the preferred habitat type does not occur near or within either Phase of this proposed development.

Bald eagles generally nest near coastlines, rivers, large lakes or streams that support an adequate food supply (USFWS, 2007). They often nest in mature or old-growth trees; snags; cliffs; rock promontories; rarely on the ground; and occasionally on human structures such as power poles. The forested areas within Phases 3 and 4 are surrounded by existing residential developments and are not of adequate size to likely support bald eagles; therefore, no impacts to this species are anticipated as a result of the proposed project.

The Ohio Department of Natural Resources (ODNR), Division of Natural Areas and Preserves (DNAP) maintains records of rare, threatened and endangered species and was contacted (2010) regarding the Chestnut Woods subdivision. There are no records of federal or state listed species within a one mile radius of the proposed development area (Appendix G, Agency Correspondence Exhibit 8). No impacts are anticipated to any state or federally-listed wildlife or plant species.

Sediment and erosion control practices will be followed during project construction for the chosen build alternative. A well designed erosion control plan, which will be incorporated into the final construction plans, will minimize short-term construction impacts on the quality of the water exiting the site by use of silt barriers, silt fences, and/or other structures appropriately placed around the construction site.

The Cuyahoga River, a tributary to Lake Erie, receives perennial Stream B that traverses the northern boundary of the site. Stream B is the receiving stream for all of the streams on-site, although the majority drain into Stream B off-site. Stream B (Unnamed Tributary) and the Cuyahoga River have both been assigned the Warmwater Habitat (WWH) aquatic life use designation (Ohio EPA, 2007). Stream B was determined to also be WWH on-site, whereas, the remaining twelve (12) streams on site are considered Primary Headwater Habitat streams ranging from Class I to Class III streams. Provisional life use designations can be found in Appendix B, Table 2; and stream assessment forms can be found in Appendix E.

10b-1. Preferred Alternative

Alterations to the natural stream structure are necessary at stream crossings within this development through the installation of new culverts. Based both on experience and the literature available, culverts are usually considered to be very localized in their effects. If they do not restrict passage of aquatic life organisms, the effects are usually short-term. The Preferred Alternative involves four new culvert locations and one culvert replacement for a total of 380 linear feet of impact.

Culverting the intermittent streams will result in the complete loss of benthic habitat by covering the stream bottom with earthen materials. Culverting leaves

the culverted stream reach in darkness, reduces primary productivity, and slightly reduces ambient water temperature. Culverts can also increase stream flow velocities which may increase downstream erosion. Soil erosion and sedimentation are major pollutants that result from construction-related activities. Generally, sedimentation decreases light penetration into the water, reducing the depth of effective photosynthesis for the phytoplankton. Benthic organisms living in areas adjacent to the construction activity could have respiratory interferences from accumulated sediments. The effects of increased sediment loads on fish movements are not clear, but fish could be affected by having to avoid such areas. Fish reproductive success may be impacted in the immediate construction area and a short distance downstream. These are short term effects which occur during construction activities and will disappear as the aquatic habitat naturally reestablishes. During construction, the clearing of bank-side vegetation at stream crossings may cause a localized increase in stream temperatures. This can create a shift in the relative population sizes of aquatic species, since the more tolerant would become very common. Furthermore, downstream habitats are often affected by the following: increased sediment deposits, increased assimilation of nutrients, increased potential of flash flooding, increased flow velocities, and decreased retention times within channelized or culverted sections (Appendix B, Table 8).

The Preferred Alternative would permanently impact four wetlands and three streams within the proposed project area, for an impact total of 0.463 acre of wetland and 380 linear feet of streams (0.027 acre) (Appendix A, Figure 3; Appendix B, Table 6). Wetlands within the Chestnut Woods subdivision were evaluated using the most recent version of the ORAM (v.5.0) and determined to be Category 1 or 2 wetlands (Appendix B, Table 1) (Appendix F, ORAM Forms). Wetland habitat descriptions are documented in the *Surface Water Delineation Report* (Hull, 2010). The locations of all wetlands to be impacted are identified on Figures 4A-4B. Wetland acreages, ORAM scores, habitat types, determination of adjacency, and impacts by the Preferred Alternative are listed in Appendix B, Table 3. These Category 1 or 2 wetlands generally have low to moderate water quality functions and show signs of past disturbances/modifications; however, Wetlands G, H, and J had some of the highest scores (ranging from 48.5 to 49) and will not be impacted by this proposed project. Proposed impacts to Wetlands A, B, L, and N total 0.463 acre and are comprised of Category 2 wetlands. With 5.094 acres of wetlands on-site, this Alternative's impact would result in an approximate loss of 9% of the wetland function within the project area. The loss of wetland habitat associated with this Alternative is not likely to have a significant impact on water quality within the Cuyahoga River watershed. This Alternative is not expected to adversely impact animal life due to the lack of high quality habitats and the current level of disturbance in the surrounding project vicinity.

A total of five stream crossings on four separate streams are proposed, of which four will be new culverts in new locations and one existing culvert will be replaced and extended for a total of 380 linear feet of stream impacts (Appendix A, Figures 5A-5C; Appendix B, Table 4; and Appendix C, Plan 1A and Plan 1B). The post-construction runoff rate is not expected to increase due to the low overall impact acreage on wetlands and streams as well as the construction of

storm water detention/retention basins proposed with this development. Color photographs of wetlands and streams associated with this Alternative are included in the *Surface Water Delineation Report* (Hull, 2010) and Appendix D.

The Preferred Alternative would culvert Stream A for 120 feet to extend Bradford Circle to the northern portion of the site to develop sub lots 93 through 109; replace an existing 50 foot culvert in Stream C with an 80 foot long culvert to accommodate the extension of Linden Lane to sub lots 89-92 and 110-125. The Preferred Alternative proposes three individual culverts for four driveway crossings and one maintenance driveway crossing over Stream F-1 (sub lots 152-155). The size of these culverts vary in length: 40 feet for sub lot 152, 70 feet for sub lots 153/154 and 70 feet for sub lot 155 and the maintenance access driveway to the north. The design of the culverts (Appendix C, Plan 1A and Plan 1B) would be such that long-term impacts to aquatic life would be minimized. The culvert design would include embedding 10% of the culvert diameter into the existing stream bottom, thereby providing roughness to minimize slope-related increases in stream power and natural substrates to support aquatic life passage. Additionally, temporary impacts to Streams F-1 and F-2 for the purposes of extending utilities to sub lots 162-174 will temporarily open cut each of these streams for a maximum length of 6 feet each (6 total crossings, 36 total linear feet) (Appendix B, Figure 5D). At present, Stream F-1 has two existing culverts and Stream F-2 has one existing culvert that were installed for a planned development that never occurred. When initially installed, these culverts were undersized for these streams and have since caused problems along the existing channels such as siltation (upstream) and head cutting (downstream). As part of the Preferred Alternative for this permit application, the applicant proposes to remove these old culverts to restore the streams to pre-culvert conditions. Additional enhancements to these two streams are discussed in detail in **Section 10k – Mitigation**. Trees and shrubs will be planted surrounding the areas of culvert removal along Streams F-1 and F-2 to provide shade as well as improve the habitat value. This plan should result in an improvement over existing conditions. Once construction within the stream's watershed is completed, it is expected that aquatic species will colonize the new portion of stream and potential silt loadings associated with construction runoff will decrease, resulting in improved stream quality.

Sediment and erosion control practices will be followed during project construction. A well-designed erosion control plan which will be incorporated into the final construction plans will minimize short-term construction impacts on the quality of the water exiting the site by use of silt barriers, silt fences, and/or other structures appropriately placed around the construction site.

10b-2. Minimal Degradation Alternative

Alterations to the natural stream structure at stream crossings within this development will not be necessary under the Minimal-Degradation Alternative due to the installation of 3-sided box culverts instead of concrete pipe culverts. The footings for the 3-sided box culverts will be placed outside of and above the ordinary high water mark, thus, no impacts to streams are expected as a result of this proposed alternative. The Minimal Degradation Alternative involves four 3-

sided box culverts in new locations and one concrete pipe culvert replacement with a 3-sided box culvert without permanently impacting any streams below the OHWM. The OHWM was determined in the field for each stream crossing and is documented in Appendix I.

The Minimal Degradation Alternative would permanently impact four wetlands within the proposed project area, for an impact total of 0.463 acre of wetland and 36 linear feet of temporary stream impact (0.027 acre) for utility crossings (Appendix A, Figure 3; Appendix B, Table 7). Wetlands within the Chestnut Woods subdivision were evaluated using the most recent version of the ORAM (v.5.0) and determined to be Category 1 or 2 wetlands (Appendix B, Table 1) (Appendix F, ORAM Forms). Wetland habitat descriptions are documented in the *Surface Water Delineation Report* (Hull, 2010). The locations of all wetlands to be impacted are identified on Figures 4A-4B. Wetland acreages, ORAM scores, habitat types, determination of adjacency, and impacts by the Minimal Degradation Alternative are listed in Appendix B, Table 3. These Category 1 or 2 wetlands generally have low to moderate water quality functions and show signs of past disturbances/modifications; however, Wetlands G, H, and J, had some of the highest scores (ranging from 48.5 to 49) and will not be impacted by this proposed project. Proposed impacts to Wetlands A, B, L, and N total 0.463 acre and are comprised of Category 2 wetlands. With 5.094 acres of wetlands on-site, this Alternative's impact would result in an approximate loss of 9% of the wetlands within the project area. The loss of wetland habitat associated with this Alternative is not likely to have a significant impact on water quality within the Cuyahoga River watershed. This Alternative is not expected to adversely impact animal life due to the lack of high quality habitats and the current level of disturbance in the surrounding project vicinity.

A total of five stream crossings on three separate streams are proposed, all of which will be 3-sided box culvert crossings with no permanent stream impacts (Appendix A, Figures 5A-5C; Appendix B, Table 5; and Appendix C, Plans 2A-2C). The post-construction runoff rate is not expected to increase due to the low overall impact acreage on wetlands and streams as well as the construction of storm water detention/retention basins proposed with this development. Color photographs of wetlands and streams associated with this Alternative are included in the *Surface Water Delineation Report* (Hull, 2010) and Appendix D.

The Minimal Degradation Alternative would avoid impacts to Stream A by utilizing a 3-sided box culvert with dimensions of 120 feet long by 5.1 feet wide to extend Bradford Circle to the northern portion of the site to develop sub lots 93 through 109; avoid impacts to Stream C by replacing an existing 50 foot culvert in Stream C with an 80 foot long by 5.1 feet wide 3-sided box culvert to accommodate the extension of Linden Lane to sub lots 89-92 and 110-125. The Minimal Degradation Alternative proposes three individual 3-sided box culverts for four driveway crossings and one maintenance driveway over Stream F-1 (sub lots 152-155) with a net result of zero impacts to these stream segments. Stream crossings for individual driveways have been paired up to reduce the total amount of stream impacts and number of stream crossings by providing single crossing locations at property lines between two sub lots in two locations (sub lots 153/154 and sub lot 155/maintenance access driveway) Additionally,

temporary impacts to Streams F-1 and F-2 for the purposes of extending utilities to sub lots 162-174 will temporarily open cut each of these streams for a maximum length of 6 feet each per crossing (6 total crossings, 36 total linear feet) (Appendix B, Figure 5D). No permanent impacts to any streams are proposed under the Minimal Degradation Alternative; therefore, no stream mitigation for this Alternative will be proposed.

Sediment and erosion control practices will be followed during project construction. A well-designed erosion control plan which will be incorporated into the final construction plans will minimize short-term construction impacts on the quality of the water exiting the site by use of silt barriers, silt fences, and/or other structures appropriately placed around the construction site.

10b-3. Non-Degradation Alternative

Due to the location and configuration of the project area stream and wetlands, coupled with development design criteria, this proposed project is not feasible or justifiable without minor impacts to these resources. Therefore, while the Non-Degradation plan as presented will not impact any wetlands or streams this project as proposed would not meet the project purpose or need under this Alternative. As the name implies, this Alternative involves scaling back the site plan to avoid all impacts to aquatic resources. Thus, there will be no lowering of water quality; no impacts on aquatic life and wildlife - including threatened and endangered species; no impacts to important commercial or recreational sport fish species, other individual species, or the overall aquatic community structure and function with this Alternative. While no new impacts to the aquatic resources would occur within the project area, the Non-Degradation Alternative does not meet the project purpose or need and is not cost effective (Appendix B, Table 8).

10c. TECHNICAL FEASIBILITY AND COST EFFECTIVENESS BY ALTERNATIVE

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.) ***(OAC 3745-1-05(C)(6)(h, j-k) and OAC 3745-1-54)***

The following section (10c-1) discusses the feasibility, availability, reliability, and operations and maintenance difficulties associated with each alternative. Section 10c-2 discusses the cost effectiveness of each alternative.

10c-1. Technical feasibility, availability to construct, reliability, and operational maintenance difficulties.

The Preferred Alternative schematic was developed such that all structures and footprints are technically feasible and available to construct. This alternative is deemed reliable with no known maintenance or operational difficulties (Appendix B, Table 9A).

The Minimal Degradation Alternative is also technically feasible, available, and reliable. This alternative differs by avoiding 380 linear feet of permanent stream habitat impacts through the use of 3-sided box culvert crossings instead of

concrete pipe culverts that are proposed with the Preferred Alternative (Appendix B, Tables 4 and 5). The stream impact reduction is accomplished by spanning the OHWM of all stream crossings with five 3-sided box culverts. Wetland impacts are the same for both the Preferred and Minimal Degradation Alternatives. In respect to the Chestnut Woods subdivision, this alternative is economically and technically feasible and reliable; however, when viewed as a whole, the Minimal Degradation Alternative will result in an overall lower profit for the applicant with this investment (Appendix B, Tables 9A and 9B).

The Non-Degradation Alternative is a "No-Impact" Alternative that does not meet the project purpose and need and is therefore not considered a technically feasible, cost effective, available, or reliable alternative (Appendix B, Table 9A)..

10c-2 Cost Effectiveness

The estimated sales associated with the Preferred and Minimal Degradation Alternatives total $13,370,000 for both Alternatives since the number of sub lots is the same (Appendix B, Table 9B). The estimated sales for the Non-Degradation Alternative totals $5,898,000 due to the reduced number of lots available to sell (Appendix B, Table 9B). The difference in potential profit between the Preferred Alternative and the Minimal Degradation Alternative is approximately $61,200 (Appendix B, Table 9B). The disparity in cost effectiveness between the Preferred and Minimal Degradation Alternatives is due to the higher cost of the 3-sided box culverts associated with the configuration of the Minimal Degradation Alternative. However, with respect to the Chestnut Woods subdivision, both the Preferred and Minimal Degradation Alternatives are cost effective and acceptable, whereas the Non-Degradation Alternative shows a loss of $2,419,442 due to fixed costs of land and other costs already incurred (Appendix B, Table 9B).

If the Non-Degradation Alternative is implemented, monetary losses include those associated with land acquisition, land clearing, Great Oaks Parkway sub road (haul road) construction as well as preliminary engineering and environmental consultation costs already incurred in the design of the Preferred and Minimal Degradation Alternatives (approximately $8,317,442 would be lost). Therefore, this alternative is not acceptable on the basis of failure to meet project purpose and need as well as failure to be cost effective (Appendix B, Table 9B).

10d. SEWAGE PROJECTS - THIS SECTION NOT APPLICABLE TO THIS PROJECT

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. ***(OAC 3745-1-05(C)(6)(I))***

This section is not applicable to the proposed project.

10e. CONSERVATION PROJECTS TARGETING THE WATER RESOURCE

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. ***(OAC 3745-1-05(B)(2)(g))***

To the extent that information is available, there are no known government or privately sponsored conservation projects that exist or that may have been formed to specifically target improvement of water quality or enhancement of recreational opportunities on the affected water resources within the project study area.

However, the Cuyahoga River Community Planning Organization is responsible for the Cuyahoga Remedial Action Plan (RAP) and has recently completed a study in the Cuyahoga River watershed titled: *Prioritizing Wetland Restoration Potential in the Tributaries of the Cuyahoga River Area of Concern (AOC)* (2008). The proposed Chestnut Woods subdivision is within Lower Cuyahoga River AOC and is considered one of the most densely populated and industrialized urban areas within the state (CRCPO, 2008). This highly urbanized portion of the Cuyahoga River watershed (including the Chestnut Woods project area) has the least amount of high quality wetlands and greatest amount of existing low quality wetlands (CRCPO, 2008). This report also found that this area had the lowest potential and lowest priority for wetland restoration projects when compared to the higher quality Upper and Middle Cuyahoga River watersheds (CRCPO, 2008). Therefore, while the Cuyahoga River watershed is receiving some much needed attention and actions taken to improve water quality, the highest priorities for preservation, restoration, and enhancement are located upstream from the Chestnut Woods project area in the less developed portions of the watershed.

The Cuyahoga Soil and Water Conservation District (SWCD) website was searched and did not reveal any information regarding specific projects targeting the streams and wetlands of the proposed project area (website viewed 3/8/2011). Furthermore, it was not evident that there were any environmental or recreational improvement projects targeting the project area unnamed tributaries to the Cuyahoga River. Therefore, no known environmental or recreational improvement projects were identified anywhere which target the surface waters to be impacted or any of the receiving streams in the immediate vicinity of the project.

The closest instrument targeting the water resources of the proposed project area is the set of riparian and wetland set back regulations put in place by the City of Independence to help with storm water issues in the city. The City of Independence adopted Riparian and Wetland setback requirements for new development within the city in 2003. This project will comply with these setback requirements and maintain vegetated buffers around all watercourses and wetlands to the maximum extent practicable. In areas where encroachment upon these buffers is necessary for practicable development, a variance from the City of Independence will be sought and obtained prior to construction.

10f. COST OF WATER PROTECTION CONTROLS BY ALTERNATIVE

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. ***(OAC 3745-01-05(C)(6)(g))***

Compliance with the applicable National Pollutant Discharge Elimination System (NPDES) permit requirements are expected to provide adequate protection to relevant water resources. Sediment and erosion control practices will be followed during

construction activities. A well-designed erosion control plan will minimize short-term construction impacts on the quality of the water discharged to "waters of the U.S." and "State" within and outside of the project area by use of silt barriers, silt fences, sedimentation ponds, and/or other structures appropriately placed around the construction site. Additionally, per County and City standards, a stormwater management system has been incorporated as part of the project development (Appendix A, Figure 4). The cost of the detention basins is the same for either Full Build Alternative and is estimated at $150,000 (Appendix B, Table 10). The cost of sanitary controls is approximately $90 per foot ($612,000 for both Full Build Alternatives; costs were rounded to the nearest dollar) (Appendix B, Table 10). The costs for the design and implementation of water pollution controls, including a storm water pollution prevention plan for the proposed project is expected to be approximately $861,051 for the Preferred and Minimal Degradation Alternatives. The water protection control costs associated with the Non-Degradation Alternative are reduced accordingly due to the smaller project footprint and would total approximately $378,853 (Appendix B, Table 10).

10g. IMPACTS ON HUMAN HEALTH AND OVERALL WATER RESOURCE QUALITY BY ALTERNATIVE

Describe any impacts on human health and the overall quality and value of the water resource. ***(OAC 3745-1-05(C)(6)(c) and OAC 3745-1-54)***

The following assessment of impacts on human health has been generalized to address all build alternatives.

10g-1. Impacts on Human Health

The impacts of the wetland and stream fill activities are not expected to lower water quality to the point that it will negatively impact human health.

10g-2. Impacts on Overall Quality and Value of the Water Resource

The Preferred and Minimal Degradation Alternatives are expected to directly impact surface waters. The following conclusions have been made regarding impacts on water quality for the **Preferred Alternative**.

Permanent stream impacts will result from culverting Stream A, culverting Stream C, and culverting Stream F-1 in three locations. In addition four wetlands will be permanently impacted during clearing, grubbing, and grading for sub lots and associated roadways and infrastructure. Construction of the Preferred Alternative as currently designed will result in 380 linear feet of stream impact and 0.463 acre of wetland impact (Appendix B, Tables 3 and 4). However, mitigation, as required by all applicable agencies and laws, will be performed as compensation for any loss of water body functions. Additionally, as part of the stream mitigation plan as discussed below in **Section 10k**, improvements to Stream F-1 and Stream F-2 will be made by removing three failed culverts in the streams that are currently causing severe erosion downstream and serving as a barrier to aquatic organisms. Removal of these structures will have a net benefit to the overall quality and value of these aquatic resources.

The following conclusions have been made regarding impacts on water quality for the **Minimal Degradation Alternative**.

No permanent stream impacts will result from utilizing 3-sided box culverts on Streams A, C, and F-1. However, four wetlands will be permanently impacted during clearing, grubbing, and grading for sub lots and associated infrastructure. Construction of the Minimal Degradation Alternative as currently designed will result in no permanent stream impacts and 0.463 acre of wetland impact (Appendix B, Tables 3 and 5). Mitigation, as required by all applicable agencies and laws, will be performed as compensation for any loss of water body functions. Additionally, the planned culvert replacement within Stream C will result in a zero net loss of stream length for the culverted segment on-site by removing an undersized concrete pipe culvert and replacing it with a larger and wider 3-sided box culvert which will span the OHWM (Appendix A, Figure 5B).

The **Non-Degradation Alternative** would not result in a lowering of water quality.

10h. SOCIAL AND ECONOMIC BENEFITS TO BE REALIZED BY ALTERNATIVE

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. ***(OAC 3745-1-5(B)(2)(e), and OAC 3745-1-05(C)(6)(I))***

Any social and economic benefits realized by the project would be realized equally for the Preferred and Minimal Degradation Alternatives. This project also proposes to finish a vital roadway connection between Great Oaks Parkway to the north side to Hillside Road. Currently, the roadway alignment consists of a narrow single lane drive, alternately paved asphalt and gravel that was constructed during Phases 1 and 2 and is used as a construction access road. The finished roadway will be a useful connection to the City of Independence Fire, Emergency, and Police Departments to provide an improved roadway for access to existing housing developments in this vicinity and in turn provide a faster response time in the event of an emergency. The City of Independence Fire Department does not use this existing roadway due to its current condition and size of the fire trucks (Personal Communication with City of Independence Fire Chief Peter Nelson, February 11, 2011). The upgrade and improvements to Great Oaks Parkway will comply with all local building codes and consist of a two-lane concrete road with curb and gutter, lighting, and fire hydrants.

The following is a brief description of the local economy of Cuyahoga County and was obtained from the U.S. Census Bureau (U.S. Census Bureau, 2000 (2010 data due out in April, 2011 and was not available when this permit application was prepared)). Cuyahoga County had a total estimated population of 1,296,287 people (estimated at 1,296,287 in 2009 (U.S. Census Bureau, 2009) comprised of Caucasian (67.4%), African American (27.4%), Asian (1.8%), two or more races (1.7%), some other race (1.5%), and American Indians/Alaskan Native (0.2%). In 2000, the median household income in Cuyahoga County (1999 dollars) was $39,168 per year with a per capita income of $22,272 and an annual average unemployment rate of 3.9 %. The percent of persons living in poverty in 2000 within Cuyahoga County was at 13.1% which is above the state average of 10.6 % (U.S. Census Bureau, 2000).

The project area is located in the City of Independence, which had a total estimated population of 7,109 people (U.S. Census Bureau, 2009) comprised of Caucasian (97.6%), African American (0.6%), Asian (1.3%), two or more races (0.4%), some other race (0.1%), and American Indians/Alaskan Native (0.0%). In 2000, the median household income in the City of Independence was $57,733 per year with a per capita income of $26,447 and an annual average unemployment rate of 1.2 % (U.S. Census Bureau, 2000). The percent of persons living in poverty in 2000 within the City of Independence was at 2.9%, which is below the Cuyahoga County and State counts (U.S. Census Bureau, 2000). The proposed direct and indirect increases in property values is unknown, however, this project is expected to positively affect these values.

The City of Independence is a prime residential location in the heart of Cuyahoga County. The City is situated at a major Interstate cross roads in the County (I-480 and I-77) and is in close proximity to downtown Cleveland (10 miles to the north), the Cleveland Hopkins International Airport (9 miles to the west), and the City of Akron (20 miles to the south). The City of Independence boasts the lowest tax rates of any city in Cuyahoga County, high quality safety services and facilities, and free city parking. With over 1,300 businesses with an estimated 25,000 employees and a comparatively low residential population base (7,109), this city is very attractive to new homeowners (City of Independence, 2011). The City of Independence is comprised of over 6,138 acres, of which, more than 50% (3,104 acres) is classified as 'Vacant' land. Residential communities make up the next largest land use in the City, comprising 1,587 acres (25.6%). The City has the available land to support an additional residential community that will add to the City's tax base.

Corporate business offices and industry has grown and is the major job supplier in the City of Independence which reduces the tax burden on the city residents. As such, affordable housing is important to this city and can help increase the tax base for the city and offset tax burdens due to possible business relocations. The need for housing is demonstrated by the growing population of the City of Independence; a 9.0% increase in population occurred from 1990 to 2000 (U.S. Census Bureau, 1990, 2000). Additionally, all of the lots (100%) within Phases 1 and 2 of Chestnut Woods Subdivision have been sold to builders or individuals; most of which have existing housing or will soon be built. For the short-term, local area businesses that will benefit from this proposed project include the building trades during construction of the infrastructure and the individual homes. For the long-term, local businesses will benefit economically through the supply of retail materials for the residents of the development. The number of jobs created (directly or indirectly) is unknown. Also, state and local tax revenues to be generated by the proposed project are unknown; however, it is unlikely to result in substantial overall tax revenue. The estimated number of jobs and tax revenue created by the existing project is listed in Appendix B, Table 11.

10i. SOCIAL AND ECONOMIC BENEFITS TO BE LOST BY ALTERNATIVE

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. ***(OAC 3745-1-05(B)(2)(e,f), and OAC 3745-1-05(C)(6)(e))***

No jobs are expected to be lost (directly or indirectly) for either the Preferred or Minimal Degradation Alternatives. Existing jobs in the area will be enhanced through project associated economic stimulation. For a brief description of the local economy of Cuyahoga County and the City of Independence, please refer to the previous section (10h). The water resources within the project area are not known to have any recreational or commercial value. Furthermore, the City of Independence enforces an ordinance on Riparian and Wetland setbacks which provide for a vegetated buffer on the surface waters within the city. This setback requirement was established to protect streams and wetlands, control storm water runoff, reduce soil erosion, and to protect the existing storm drain infrastructure within the City. Therefore, neither alternative is expected to negatively affect these resources or city infrastructure on the receiving streams and further down slope from this project. No businesses are expected to be negatively impacted by the proposed project. Future land use and development surrounding the project area is not expected to be negatively affected by the proposed project.

10i-1. Preferred Alternative and Minimal Degradation Alternatives

The connection of Great Oaks Parkway to Hillside Road as proposed in both the Preferred and Minimal Degradation Alternatives will provide additional access for the City of Independence Fire Department allowing faster access and decreased response time to local residents in the existing and surrounding neighborhoods connected to Chestnut Woods. The Preferred and Minimal Degradation Alternatives are not expected to adversely affect the local and regional economy and commerce. No jobs or businesses are dependent on the vacant undeveloped land within this project area; therefore, impacts associated with either build alternative are not expected to adversely affect the local or regional economies. Rather, both full-build alternatives would likely benefit the economy and commerce by creating new jobs and taxable properties and incomes.

10i-2. Non-Degradation Alternative

The Non-Degradation Alternative would likely turn into a “No-Build” Alternative due to the financial burden it would create for the applicant. The Non-Degradation Alternative, if implemented, would not benefit fire department response time, potentially endangering local residents, resulting in negative social or economic benefits. Additionally, the project’s stated purpose and need would not be met; therefore this is not a viable alternative.

10j. ENVIRONMENTAL BENEFITS TO BE LOST AND GAINED BY ALTERNATIVE

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. ***(OAC 3745-1-05 (B)(2)(e,f), OAC 3745-1-05 (C)(6)(b) and OAC 3745-1-54)***

10j-1. Environmental Benefits to be Lost

The project area is not known to harbor threatened and endangered species; therefore, no threatened or endangered species impacts are anticipated with the selection of any of the alternatives (Appendix G, Agency Correspondence Exhibits 7 and 8). Any natural sediment-moving capabilities provided by the

project area streams would not be affected by either of the build alternatives. Both build alternatives would allow for positive drainage without impeding current flow characteristics of the streams.

Sediment and erosion control practices and implementation of a storm water pollution and prevention plan will reduce siltation of downstream portions of the streams and minimize silt deposition off-site to the maximum extent practicable. Therefore, project associated siltation downstream of the project area is anticipated to be minimal and temporary.

Wetland losses associated with the Preferred and Minimal Degradation Alternatives are the same and will result in a loss of function and will be mitigated off-site as described in Section 10k. Four wetlands will experience partial or complete filling and will lose all or a portion of their flood attenuation and pollutant filtering capabilities. Flood attenuation and pollutant filtering capabilities will be completely lost for Wetland A with partial losses to Wetlands B, L, and N (Appendix A, Figure 3; Appendix B, Table 3). These wetlands are considered be of moderate quality and function (ORAM Category 2).

Both build alternatives would have a temporary environmental impact during construction activities. Environmental impacts incurred during construction of either build alternative would be created by clearing, grubbing, and excavation within the project area.

10j-2. Environmental Benefits to be Gained

Waterway functions of two streams on-site (discussed in detail in Section 10k – Mitigation) are expected to recover and actually improve as a direct result of the stream improvements through removal of three existing culverts as proposed in the Preferred Alternative conceptual mitigation plan. Two existing culverts in Stream F-1 and one existing culvert in Stream F-2 have become clogged which has caused the stream banks and beds to erode downstream of the culvert. The mitigation plan for the Preferred Alternative proposes to remove the culverts, restore the stream bed and correct the erosion issues (See **Section 10k** below). Flood attenuation will be better on-site after development due to properly engineered storm water facilities constructed throughout the site following the requirements set forth by the Ohio EPA.

The proposed compensatory mitigation for stream and wetland impacts associated with the Preferred and Minimal Degradation Alternatives is documented in detail in Section 10k and Appendix H. The on-site stream restoration proposed for the Preferred Alternative will restore several hundred feet of stream and floodplain, correct erosion problems resulting in high flood attenuation and pollutant filtering capabilities; as well as enhanced riparian vegetation diversity and habitat interspersion; resulting in increased habitat diversity for wildlife use. Another environmental benefit to be realized by this proposed plan is the preservation of 91% of the 5+ acres of existing wetlands on-site and 97% of the existing 14,900+ linear feet of stream on-site through a conservation easement with the West Creek Preservation Committee (see details in Appendix H – Stream Preservation).

Additionally, the Minimal Degradation Alternative proposes to lessen permanent stream impacts from 380 linear feet (Preferred Alternative) to 0 linear feet (Minimal Degradation Alternative). Flood attenuation and pollutant filtering capacity will be improved with either build alternative; however, the Minimal Degradation Alternative will provide the most benefit by stream impact avoidance and minimization as well as stream habitat improvements (Stream C culvert replacement).

10k. MITIGATION TECHNIQUES PROPOSED

*Describe mitigation techniques proposed (except for the Non-Degradation Alternative): Describe proposed Wetland Mitigation (see **OAC 3745-1-54** and Primer); Describe proposed Stream, Lake, Pond Mitigation (see Primer)*

Stream and wetland mitigation opportunities were evaluated on-site within the project limits, within a one-mile radius, and off-site within the Cuyahoga and adjacent watersheds. Potential projects were researched on the Ohio EPA's Surface Water Enhancement, Restoration, and Protection (SWERP) Clearinghouse Website (http://wwwapp.epa.ohio.gov/dsw/gis/swerp /index.php). This internet database search revealed several projects in association with either the West Creek Preservation Committee or the Cuyahoga Valley National Park in relatively close proximity to the proposed project. Personal communication with David Linchek of the West Creek Preservation Committee (via email and several telephone conversations) and the Cuyahoga Valley National Park (email to Kevin Skerl) was initiated to learn more about the potential mitigation sites each of these organizations has listed on Ohio EPA's SWERP website. Mr. David Linchek of the West Creek Preservation Committee discussed several of his projects where they would like to do wetland mitigation but he stated that none of the potential wetland projects had any design or cost elements associated with them. To date, Mr. Skerl has not replied back to the email requesting information on 3/14/2011. Therefore, since these conceptual wetland mitigation projects are in the early stages of development and not shelf ready at the time this application was submitted, we have determined that there aren't any viable wetland mitigation projects within close proximity to the proposed project area, thus wetland mitigation will be pursued off-site at an MBRT approved wetland mitigation bank within the impact watershed or an adjacent watershed. Stream mitigation however, as proposed below, will be conducted on-site.

10k-1. Preferred Alternative

The Preferred Alternative proposes to impact 0.463 acres of forested/emergent/scrub-shrub wetland habitat. In addition to wetland impacts the Preferred Alternative proposes to culvert 380 linear feet of stream channel in Streams A, C, and F-1, all unnamed tributaries to an unnamed tributary to the Cuyahoga River (Appendix A, Figures 3, 4A-4B, and 5A-5C) (Appendix B, Tables 12 and 13).

The wetland mitigation ratio table in the Ohio wetland antidegradation rule (OAC 3745-1-54) was used to determine the amount of proposed wetland mitigation that would be required as compensation for wetland impacts associated with Phases 3 and 4 of this development (Ohio EPA, 1998). Hull & Associates'

ecologists are experienced at locating, designing, and managing many successful wetland mitigation projects throughout Ohio. In our professional opinion, the potential for wetland mitigation opportunities on-site are very limited due to the ravine-and-valley topography. The majority of wetlands on-site are long linear systems associated with streams and are mostly situated in the deep stream valleys found throughout the property. Existing wetlands on the site are limited to the floodplains of the many small streams and are linear in shape. The largest floodplain areas on the site are already occupied by Category 2 wetlands (e.g., Wetlands B, E and H). It appears that more harm than good would come from trying to access these areas and improve or create wetlands within the existing stream corridors throughout the site. Therefore, the applicant proposes to pursue off-site wetland mitigation options to compensate for 0.463 acre of Category 2 forested wetland habitat impacts associated with this project. The total amount of off-site wetland mitigation credit required for this project is 1.2 acres. The Wellington Reservoir wetland mitigation bank in an adjacent watershed has wetland mitigation credits available, however, this mitigation bank does not service forested wetland impacts. Therefore, the applicant requests approval to purchase wetland mitigation credits at the Edison Woods Wetland Mitigation Bank in a non-adjacent watershed as an alternative due to the lack of forested credits at Wellington Reservoir. A wetland mitigation agreement has been initiated with the North Coast Regional Park District (Appendix H – Wetland Mitigation).

The proposed stream mitigation will account for all stream impacts on-site by restoring at least 540 linear feet of stream habitat thus replacing all lost stream habitat functions proposed in the Preferred Alternative with in-kind stream mitigation for a net gain in linear feet of stream on-site (Appendix H, Preferred Alternative). Removal of the culverts will significantly reduce the tendency of Streams F-1 and F-2 to erode and incise, and the floodplain and vegetation restoration will greatly enhance stream values and functions over the existing deteriorating stream segments.

To compensate for stream impacts, the Preferred Alternative proposes to remove two existing culverts on Stream F-1 and one existing culvert on Stream F-2, restore the stream bed, banks and adjacent floodplain, and restore active floodplain and stabilize eroding stream banks along 300 feet of Stream F-2. (Appendix B, Table 13) (Appendix H, Proposed Compensatory Stream and Wetland Mitigation - Preferred Alternative). The three existing culverts were installed under a USACE nationwide permit in the late 1990s in association with previous development plans on this property and have become partially clogged with sediment and debris and are essentially non-functioning today. As a result of installation of these culverts, the increased energy of the stream flowing through, around, and over these obstructions is causing stream bank erosion along the existing stream channels. On Stream F-1, the erosion is moderate and relatively limited, and the stream does not appear to be incising. On Stream F-2, the stream has incised to a depth of 1 to 1.5 feet and become entrenched, and stream bank erosion is severe. Additionally, the concentrated velocities have scoured the banks and destroyed the natural floodplain and riparian vegetation downstream of the Stream F-2 culvert. To compensate for the proposed project stream impacts, the existing culverts will be removed, the stream bed, banks and

floodplains adjacent to the removed culverts will be restored, and a new floodplain will be restored via excavation along Stream F-2 downstream of the culvert. The Stream F-2 banks will be armored with longitudinal peaked stone toe protection (LPSTP) on the outside of meanders where necessary and the banks and restored floodplain will be replanted with native vegetation comprised of herbs, trees and shrubs common to the surrounding area. Additionally, the replacement of an existing undersized concrete pipe culvert within Stream C with a 3-sided box culvert will benefit aquatic life and natural stream functions by restoring the streambed to this portion of Stream C during construction of the 3-sided box culvert.

10k-2. Minimal Degradation Alternative

The Minimal Degradation Alternative proposes to impact 0.463 acre of forested/emergent/scrub-shrub wetland habitat (Appendix A, Figures 3 and 4A-4B) (Appendix B, Tables 12 and 13).

The wetland mitigation ratio table in the Ohio wetland antidegradation rule (OAC 3745-1-54) was used to determine the amount of proposed wetland mitigation that would be required as compensation for wetland impacts associated with Phases 3 and 4 of this development (Ohio EPA, 1998). Hull & Associates' ecologists are experienced at locating, designing, and managing many successful wetland mitigation projects throughout Ohio. In our professional opinion, the potential for wetland mitigation opportunities on-site are very limited due to the ravine-and-valley topography. The majority of wetlands on-site are long linear systems associated with streams and are mostly situated in the deep stream valleys found throughout the property. Existing wetlands on the site are limited to the floodplains of the many small streams and are linear in shape. The largest floodplain areas on the site are already occupied by Category 2 wetlands (e.g., Wetlands B, E and H). It appears that more harm than good would come from trying to access these areas and improve or create wetlands within the existing stream corridors throughout the site. Therefore, the applicant proposes to pursue off-site wetland mitigation options to compensate for 0.463 acre of Category 2 forested wetland habitat impacts associated with this project. The total amount of off-site wetland mitigation credit required for this project is 1.2 acres. The Wellington Reservoir wetland mitigation bank in an adjacent watershed has wetland mitigation credits available, however, this mitigation bank does not service forested wetland impacts. Therefore, the applicant requests approval to purchase wetland mitigation credits at the Edison Woods Wetland Mitigation Bank in a non-adjacent watershed as an alternative due to the lack of forested credits at Wellington Reservoir. A wetland mitigation agreement has been initiated with the North Coast Regional Park District (Appendix H – Wetland Mitigation).

The Minimal Degradation Alternative will not permanently impact any streams, therefore, no stream mitigation is proposed under this Alternative. However, the replacement of an existing undersized concrete pipe culvert within Stream C with a 3-sided box culvert will benefit aquatic life and natural stream functions by restoring the streambed to this portion of Stream C during construction of the 3-sided box culvert.

EXHIBIT 9: References Cited

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APPENDIX A

Figures

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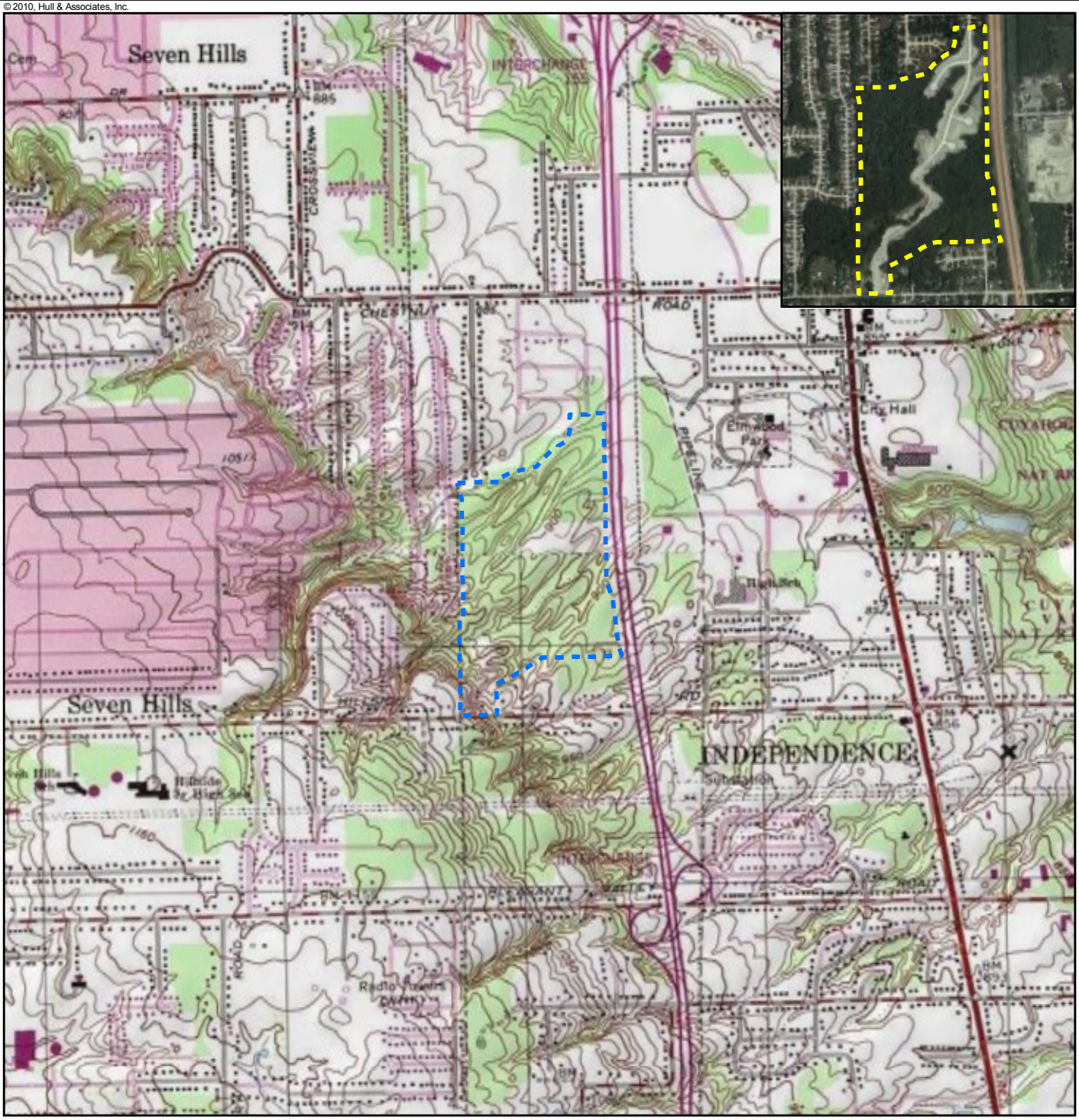

Legend

Approximate Site Boundary

Source: The topographic map was acquired through the USGS Topographic Map web service. Topo quadrangle dated1985.

0 500 1,000 2,000 Feet

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N

Hull & associates, inc.

6397 Emerald Parkway
Suite #200
Dublin, Ohio 43016

Phone: (614) 793-8777
Fax: (614) 793-9070
www.hullinc.com

Surface Water Delineation
Perrico Property Systems, Inc

Site Location Map

Chestnut Woods Subdivision
City of Independence, Cuyahoga County, Ohio

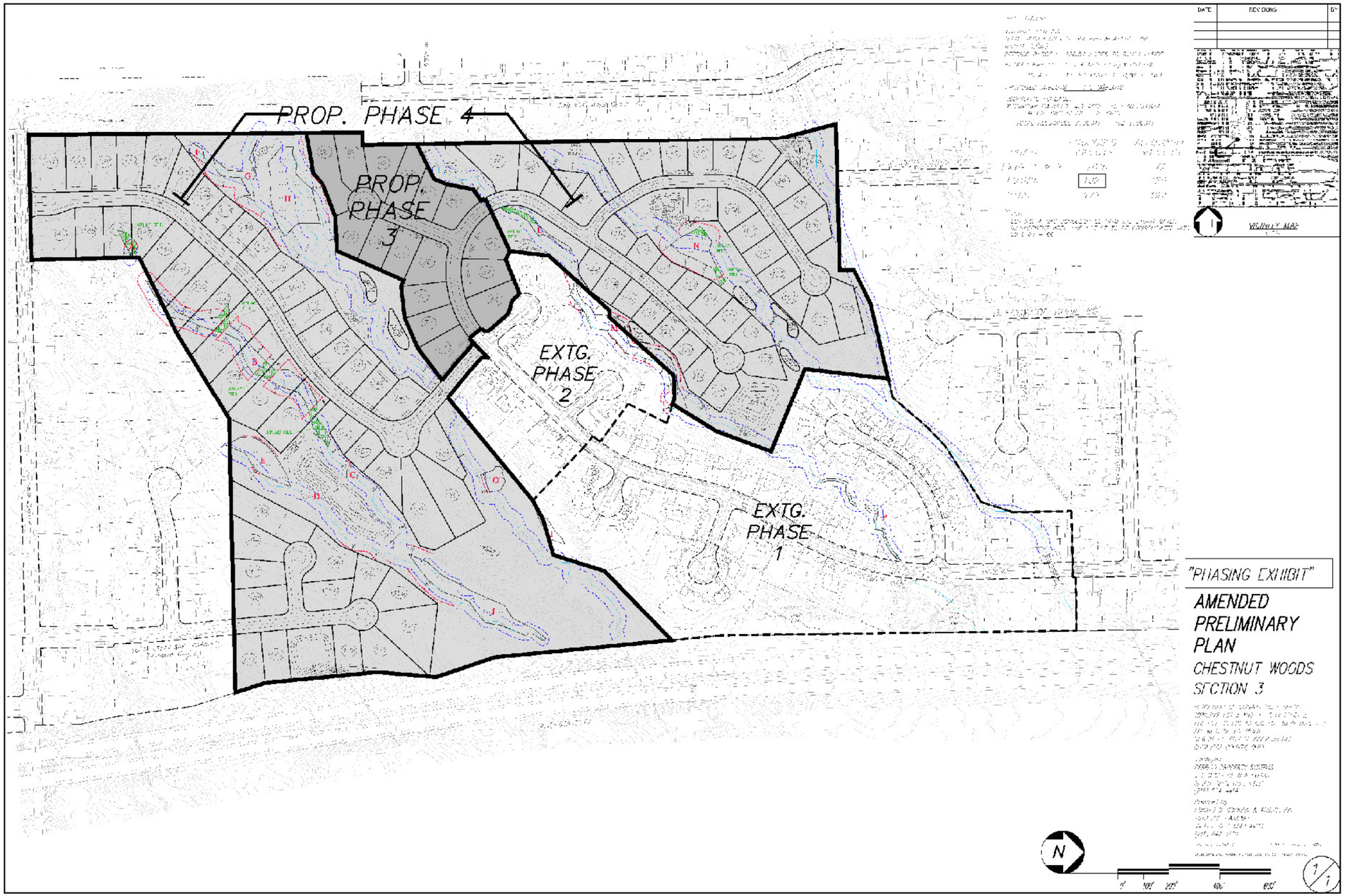
Date:
July 2010

File Name:
PPS002_01_Fig01_SiteLocMap.mxd

Edited: 7/7/2010 By: kwildman

Figure
1

Produced using ArcGIS 9.3.1 SP1



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PHONE: (440) 232-9945
FAX: (440) 232-9946
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CLEAN WATER ACT SECTION 404 AND 401 APPLICATION
CHESTNUT WOODS SUBDIVISION PHASES 3 AND 4

FIGURE 2

CHESTNUT WOODS DEVELOPMENT PLAN OVERVIEW
(PHASES 1-4)

GREAT OAKS PARKWAY AND HILLSIDE ROAD
CITY OF INDEPENDENCE, CUYAHOGA COUNTY, OHIO

PROJECT NO.:	PPS003	SUBMITTAL DATE:	JUNE 2011
CAD DWG FILE:	PPS003.200.0002	PLOT DATE:	6/8/11

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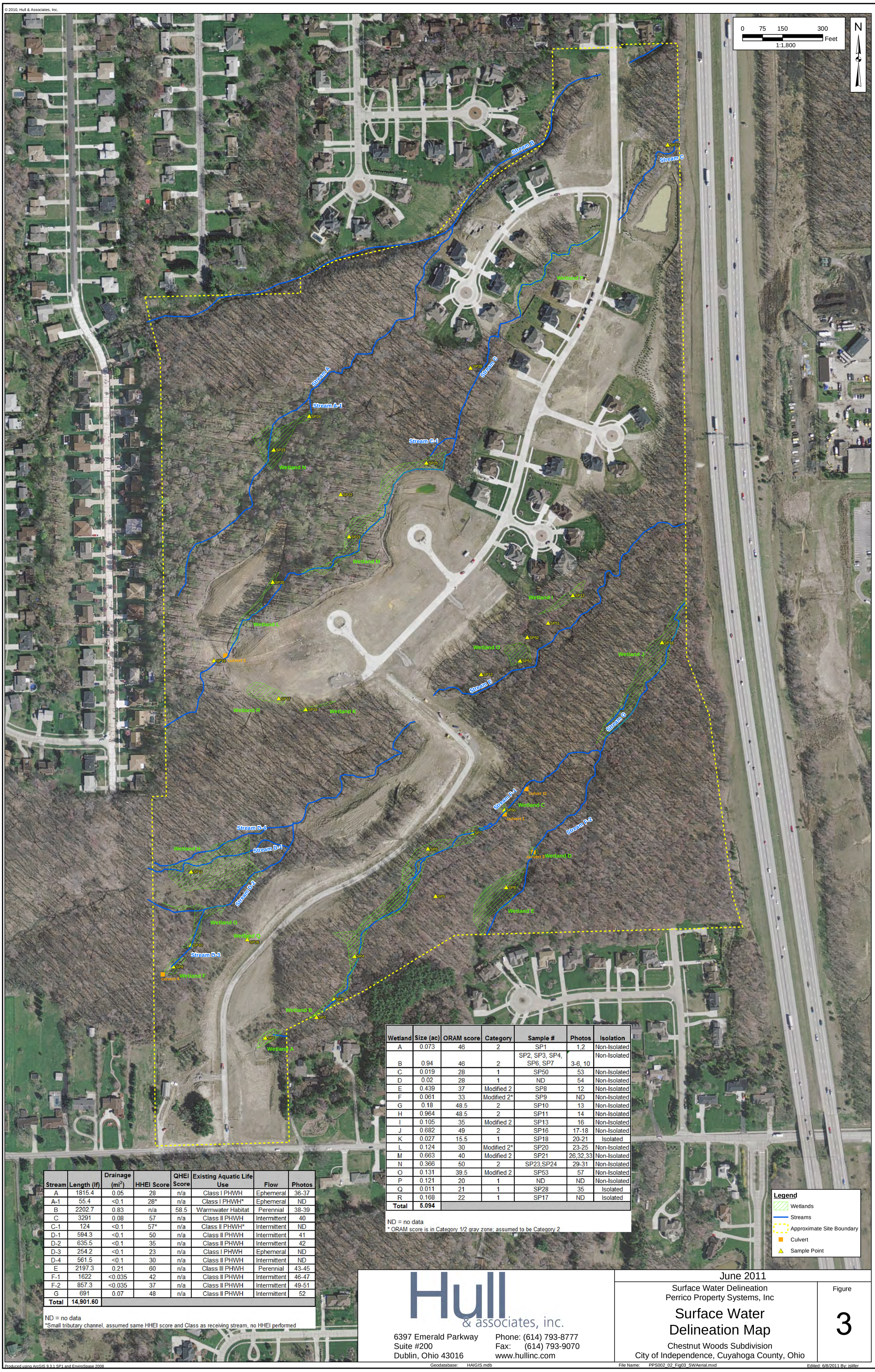

Wetland	Size (ac)	ORAM score	Category	Sample #	Photos	Isolation
A	0.073	46	2	SP1	1,2	Non-Isolated
B	0.94	46	2	SP2, SP3, SP4, SP6, SP7	3-6, 10	Non-Isolated
C	0.019	28	1	SP50	53	Non-Isolated
D	0.02	28	1	ND	54	Non-Isolated
E	0.439	37	Modified 2	SP8	12	Non-Isolated
F	0.061	33	Modified 2*	SP9	ND	Non-Isolated
G	0.18	48.5	2	SP10	13	Non-Isolated
H	0.964	48.5	2	SP11	14	Non-Isolated
I	0.105	35	Modified 2	SP13	16	Non-Isolated
J	0.682	49	2	SP16	17-18	Non-Isolated
K	0.027	15.5	1	SP18	20-21	Isolated
L	0.124	30	Modified 2*	SP20	23-25	Non-Isolated
M	0.663	40	Modified 2	SP21	26,32,33	Non-Isolated
N	0.366	50	2	SP23,SP24	29-31	Non-Isolated
O	0.131	39.5	Modified 2	SP53	57	Non-Isolated
P	0.121	20	1	ND	ND	Non-Isolated
Q	0.011	21	1	SP28	35	Isolated
R	0.168	22	1	SP17	ND	Isolated
Total	**5.094**					

ND = no data
* ORAM score is in Category 1/2 gray zone; assumed to be Category 2

Stream	Length (lf)	Drainage (mi^2)	HHEI Score	QHEI Score	Existing Aquatic Life Use	Flow	Photos
A	1815.4	0.05	28	n/a	Class I PHWH	Ephemeral	36-37
A-1	55.4	<0.1	28*	n/a	Class I PHWH*	Ephemeral	ND
B	2202.7	0.83	n/a	58.5	Warmwater Habitat	Perennial	38-39
C	3291	0.08	57	n/a	Class II PHWH	Intermittent	40
C-1	124	<0.1	57*	n/a	Class II PHWH*	Intermittent	ND
D-1	594.3	<0.1	50	n/a	Class II PHWH	Intermittent	41
D-2	635.5	<0.1	35	n/a	Class II PHWH	Intermittent	42
D-3	254.2	<0.1	23	n/a	Class I PHWH	Ephemeral	ND
D-4	561.5	<0.1	30	n/a	Class II PHWH	Intermittent	ND
E	2197.3	0.21	60	n/a	Class III PHWH	Perennial	43-45
F-1	1622	<0.035	42	n/a	Class II PHWH	Intermittent	46-47
F-2	857.3	<0.035	37	n/a	Class II PHWH	Intermittent	49-51
G	691	0.07	48	n/a	Class II PHWH	Intermittent	52
Total	**14,901.60**						

ND = no data
*Small tributary channel, assumed same HHEI score and Class as receiving stream, no HHEI performed

Hull & associates, inc.
6397 Emerald Parkway
Suite #200
Dublin, Ohio 43016
Phone: (614) 793-8777
Fax: (614) 793-9070
www.hullinc.com

June 2011

Surface Water Delineation
Perrico Property Systems, Inc

Surface Water Delineation Map

Chestnut Woods Subdivision
City of Independence, Cuyahoga County, Ohio

Figure
3

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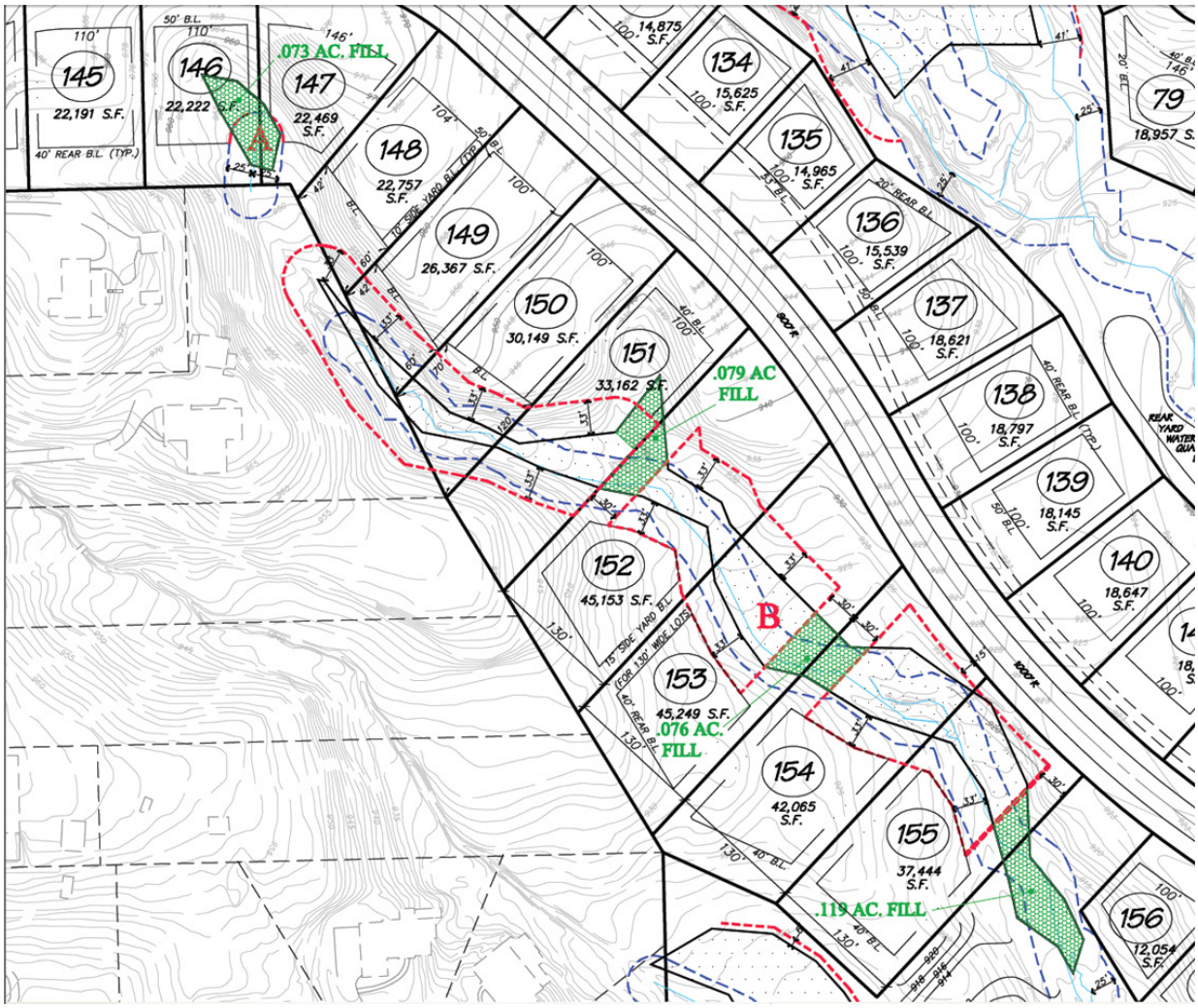
CLEAN WATER ACT SECTION 404 AND 401 APPLICATION
CHESTNUT WOODS SUBDIVISION PHASES 3 AND 4

FIGURE 4

PREFERRED AND MINIMAL DEGRADATION ALTERNATIVE PLAN

GREAT OAKS PARKWAY AND HILLSIDE ROAD
CITY OF INDEPENDENCE, CUYAHOGA COUNTY, OHIO

PROJECT NO.:	PPS003	SUBMITTAL DATE:	JUNE 2011
CAD DWG FILE:	PPS003.200.0002	PLOT DATE:	6/8/11



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CLEAN WATER ACT SECTION 404 AND 401 APPLICATION
CHESTNUT WOODS SUBDIVISION PHASES 3 AND 4

FIGURE 4A
WETLAND IMPACTS FOR THE PREFERRED AND MINIMAL DEGRADATION ALTERNATIVES (WETLANDS A AND B)

GREAT OAKS PARKWAY AND HILLSIDE ROAD
CITY OF INDEPENDENCE, CUYAHOGA COUNTY, OHIO

PROJECT NO.: PPS003	SUBMITTAL DATE: JUNE 2011
CAD DWG FILE: PPS003.200.0001	PLOT DATE: 6/3/11