

# Draft Environmental Assessment Hamilton Drain Watershed Basin and Stormwater Improvements

Polk County, Iowa  
FEMA 1763- DR-IA

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## Abbreviations and Acronyms

ACM	Asbestos Containing Material
ACOE	U.S. Army Corps of Engineers
APE	Area of Potential Effect
BMP	Best Management Practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CMP	Corrugated Metal Pipe
dB	Decibels
EA	Environmental Assessment
EHP	Environmental Planning and Historic Preservation
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
GHG	Greenhouse Gases
HMGP	Hazard Mitigation Grant Program
HPC	Historic Preservation Commission
HUD	U.S. Department of Housing and Urban Development
IHSEMD	Iowa Homeland Security and Emergency Management Division

## Abbreviations and Acronyms continued

IDNR	Iowa Department of Natural Resources
LTRC	Long-Term Recovery Committee
LUST	Leaking Underground Storage Tank
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OSA	Office of the State Archaeologist
RCP	Reinforced Concrete Pipe
RCRA	Resource Conservation and Recovery Act
REC	Recognized Environmental Condition
RIO	Rebuild Iowa Office
sf	Square Feet
SHPO	State Historic Preservation Office
SHSI	State Historic Society of Iowa
SWPPP	Storm Water Pollution Prevention Plan
TEH	Total Extractable Hydrocarbons
USDA	U.S. Department of Agriculture
UST	Underground Storage Tank
USFWS	U.S. Fish and Wildlife Service
VMT	Vehicle Miles Traveled

# 1. INTRODUCTION

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Polk County is approximately located in the center of Iowa at the southern tip of a geological formation shaped by glaciation known as the Des Moines Lobe. The landscape is predominantly flat with gentle rolling hills and was historically dotted with interconnected freshwater wetlands known as Prairie Potholes, a significant proportion of which have been drained for farmland. The County Seat of Polk County and the State Capital is Des Moines, which along with the metropolitan area dominates the geographic area of the county. Portions of the county have experienced increased flooding over the last 30 to 40 years, which is also the period of time in which urbanization has increased in those areas.

In partnership with the City of Des Moines, Polk County hired Brice, Petrides, and Associates, Inc. to prepare the June 1985 Hamilton Drain Flood Control study (hereon 1985 Report) summarizing recommendations made in three prior reports dating back to February 1982. Other flood-related studies in this watershed pre-dated this series of reports as well. The 1985 Report recommended a series of immediate and future needs consisting of detention basins, storm sewers, culvert improvements, and open channels; since the report was prepared, a number of the recommendations have been implemented. As part of the project proposed for FEMA funding following the 2008 floods, Polk County contracted with Snyder & Associates to prepare a draft EA and associated documentation for submittal to FEMA. Following several versions of the Snyder & Associates reports that were submitted and found incomplete or inadequate, FEMA initiated this EA and incorporated relevant portions of the consultant's reports into this document.

The National Environmental Policy Act (NEPA) requires that Federal agencies evaluate the environmental effects of their proposed and alternative actions before deciding to fund an action. The President's Council on Environmental Quality (CEQ) has developed a series of regulations for implementing the NEPA. These regulations are included in Title 40 of the Code of Federal Regulations (CFR), Parts 1500–1508. They require the preparation of an Environmental Assessment (EA) that includes an evaluation of alternative means of addressing the problem and a discussion of the potential environmental impacts of a proposed Federal action. An EA provides the evidence and analysis to determine whether the proposed Federal action will have a significant adverse effect on human health and the environment. An EA, as it relates to the FEMA program, is prepared according to the requirements of the Stafford Act and 44 CFR, Part 10. This section of the Federal Code requires that FEMA take environmental considerations into account when authorizing funding or approving actions. This EA was conducted in accordance with both CEQ and FEMA regulations for NEPA and will address the environmental issues associated with the FEMA grant funding as applied to proposed mitigation of flooding within the Hamilton Drain Watershed in Polk County, Iowa.

## 2. PURPOSE AND NEED

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Pursuant to Section 404 of the Robert T. Stafford Disaster and Emergency Assistance Act of 1974, as amended and 44 CFR 206 subpart N, Polk County has requested funding through FEMA's Hazard Mitigation Grant Program (HMGP). FEMA's HMGP provides grants to state and local governments to implement long-term hazard mitigation measures after major disaster declarations. The purpose of HMGP is to reduce the loss of life and property due to natural and human-related disasters and to enable mitigation measures to be implemented during the disaster recovery process. The purpose of the proposed project is to assist Polk County in reducing frequent flooding within the Hamilton Drain Watershed and thereby reduce damages to roads, septic systems, homes, and businesses.

In the early 1980's the City of Des Moines and Polk County initiated a series of studies on flooding within the Hamilton Drain Watershed, culminating in the 1985 Report and the recommendations contained therein. While some of the recommendations have been implemented, changes in land use have also continued within the watershed which has altered the hydrology and flooding dynamics of the watershed. Of the measures that have been implemented, positive impacts on controlling and reducing flooding have been seen in portions of the Hamilton Drain Watershed. Following the 2008 flooding that resulted in FEMA Disaster Declaration 1763; Polk County initiated a hazard mitigation planning process in partnership with 16 municipalities within the County which was ultimately accepted by FEMA July 2, 2009. This process identified flooding, both from riverine and flash flooding sources, as one of the most significant hazards faced by the County. The hazard mitigation plan identified the high priority mitigation actions to include the construction of storm water basins and channel improvements within the Hamilton Drain Watershed.

Areas in this watershed have been subjected to recurring flood events; some areas flood during events with less than a one-year return period. High volumes of surface runoff at high velocities have caused overloading and overtopping of existing conveyance systems consisting primarily of open channels along roads and within natural drainage channels. These instances of flooding have resulted in damages to roads, periods of road closures, damages to homes, businesses, and septic systems, and scour of natural channels. Changes in storm frequency and changes in land use and development have the potential to exacerbate known flooding problems and pose additional threat of damages and road closures in the future.

### **3. ALTERNATIVES ANALYSIS**

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NEPA requires the investigation and evaluation of reasonable project alternatives as part of the project environmental review process. EO 11988 requires the investigation of practicable alternatives prior to Federal agencies taking actions that provide direct or indirect support of floodplain development. Inclusion of a No Action Alternative in the environmental analysis and documentation is required under NEPA. The No Action Alternative is used to evaluate the effects of not providing eligible assistance for the project, thus providing a benchmark against which “action alternatives” may be evaluated.

#### **3.1 ALTERNATIVE 1 - NO ACTION**

The No Action Alternative as required under NEPA is used to evaluate the effects of not providing eligible assistance for the project, thus providing a benchmark against which “action alternatives” may be evaluated. For the purposes of this alternative, Polk County would not receive FEMA funds to implement mitigation measures to control flooding in the Hamilton Drain Watershed. Continued flooding and flash flooding of roads, erosion, and inundation of septic systems would be expected for 25 and 50-year storms (events with the probability of occurrence in any given year of 4 percent and percent, respectively); structural damages and mold growth could also be anticipated when homes and businesses are impacted.

#### **3.2 ALTERNATIVE 2 - PROPOSED ACTION**

Through consideration of the 1985 Report and the priorities, goals, and findings of the Polk County Hazard Mitigation Plan adopted in July 2009, the County and consultants identified locations for three basin systems including associated open channel and storm sewer improvements. A typical installation would require the construction of a berm, outlet structure, and additional excavation and grading at existing low-lying areas and natural channels to control release rates and provide adequate freeboard to store a 100-year flooding event. The proposed project is expected to significantly reduce the free outflow rate and thereby reducing frequency and impact of downstream flooding. The locations of the proposed detention basins were selected based predominantly on topography, areas with a history of flood-related closures or damages, and the availability and cost of land.

Basin 1: Improvements include twin 48-inch reinforced concrete pipes (RCP) that would connect under the road from the northeast corner of the intersection of NE 52<sup>nd</sup> Avenue and NE 3<sup>rd</sup> Street to a proposed open channel that drains to northern-most point of the proposed Basin 1. The existing 36-inch corrugated metal pipe (CMP) at the southeast corner of the proposed basin, currently draining the roadside ditch on the basin-side to the east side of NE 3<sup>rd</sup> Street, would be replaced with a 36-inch RCP and new outlet control structure; the existing ditch would be incorporated into the proposed basin to allow this outlet structure to drain the proposed basin. The existing vegetated area encompassing the proposed basin would be graded from the northwest portion to drain toward the southeast corner, near the intersection of NE 49<sup>th</sup> Place and NE 3<sup>rd</sup> Street (Appendix A, Figures 4-5).

Basin 2 and 2A: Improvements include a pair of basins, both of which are on or adjacent to the Saydel High School property acting in tandem to control the stormwater discharge rate from the school and adjacent

residential and commercial properties. The proposed Basin 2A would be located on the east side of the school property upstream from Basin 2 and would require the acquisition of property or easements from several private properties where the majority of the proposed Basin 2A would be located. The basin would drain to the south with a proposed 36-inch culvert with outlet control structure to carry discharge to an existing creek passing through private properties that drains toward the proposed Basin 2. The proposed Basin 2 would be located primarily along NE 54<sup>th</sup> Avenue with some channel improvements to the existing stream that passes through private properties. Stormwater conveyed into the proposed Basin 2 would drain to the southwest into a proposed 48-inch RCP. This RCP would replace an existing 48-inch corrugated metal pipe and outlet structure that discharges to the southwest corner of the intersection of NE 7<sup>th</sup> Street, NE 54<sup>th</sup> Avenue, and a private driveway (Appendix A, Figures 7-8).

Basin 3: Improvements include construction of a detention basin on property currently used as cropland northeast of the intersection of NE 7<sup>th</sup> Street and NE 47<sup>th</sup> Place owned by Polk County and a private owner. The improvements consist of grading the site toward the southwest corner of the proposed basin site which is currently occupied by a wooded wetland. A multi-stage outlet control structure is proposed across Drainage Ditch #51 (Walfley Creek) on the upstream side of the existing culvert and access road to the site. The existing berm separating Walfley Creek from the proposed basin will be partly removed to provide an outlet for stormwater into the basin for temporary detention (Appendix A, Figure 9).

NE 7<sup>th</sup> Street Storm Sewer: A proposed 48-inch RCP would connect low-lying areas between the curve joining NE 7<sup>th</sup> Street to NE 51<sup>st</sup> Street, NE 6<sup>th</sup> Court, and NE 52<sup>nd</sup> Avenue to a proposed 66-inch RCP crossing under NE 50<sup>th</sup> Avenue. The 66-inch RCP would connect to a proposed open channel with concrete cunette south of NE 50<sup>th</sup> Avenue parallel to an antique mall and parking lot. This proposed cunette would lead to and discharge storm water into existing 48-inch and 36-inch RCP passing under Interstate-35/80. While the existing RCP discharge on the south side of the highway near the proposed Basin 3, water discharged would bypass the proposed basin along existing open channels (Appendix A, Figure 6).

### **3.3 OTHER ALTERNATIVES CONSIDERED**

The Applicant considered an alternative to increase the size and capacity of conveyance systems throughout the Hamilton Drain Watershed. This alternative would require expansion of existing open channels, storm sewers, and new or enlarged culverts; implementation of this alternative would also require replacement of streets and other adjacent utilities within significantly developed areas. This alternative would also require acquisition of several properties. This alternative was dismissed in part due to cost but also as increased conveyance capacity would increase flooding and erosion downstream due to accelerating storm water removal from the project areas to downstream areas.

An earlier version of the proposed project also included two detention basins previously identified in the 1985 Brice, Petrides, and Associates, Inc. report which have been eliminated from the proposed project. Elimination of these two basins resulted from engineering models that found the two to be ineffective at reducing flooding in the southern portion of the watershed. The first eliminated basin identified as East Basin No. 3 on the 1985 report and as Basin 4 in Snyder & Associates evaluation, located north of Broadway Avenue and between the railroad tracks and commercial properties west of Delaware Avenue. The other eliminated basin identified as Basin 5 in Snyder & Associates evaluation, south of the proposed location of East Basin No. 4 in the 1985

report. This Basin 5 would have been located between the commercial areas adjacent to Delaware Avenue and the railroad tracks, south of Broadway Avenue. Both of these eliminated basins would have also directly impacted freshwater emergent and forested wetlands. Both basins eliminated in this EA are depicted on Snyder & Associates' Exhibit 4.1 (see Appendix A, Figures 2-3)

Alternate locations for the proposed Basins 1 and 3 were considered to avoid or minimize impacts to wetlands identified by the U.S. Fish and Wildlife Service, Natural Resource Conservation Service soils maps, and site visits. The initial location of the proposed Basin 3 was located north of NE 54th Avenue, adjacent on the east side to the Union Pacific Railroad tracks between NE 22nd Street to the east and NE 17th Street to the west. This initial proposed location for Basin 3 would have directly impacted a 1.3 acre forested freshwater wetland; while this location would have been effective at reducing downstream flooding, the hydraulic and hydrology studies yielded significantly more effective flood control at the location detailed in Alternative 2.

Initial recommendations for a single Basin 2 were rejected as the storage capacity at the proposed Saydel High School location, along NE 54<sup>th</sup> Avenue, would present an unacceptable threat of flooding at one or more residential properties along the same roadway. Proposed Basin 2A was added to the Saydel High School basin system to reduce the storage capacity necessary to accomplish the project goals without potentially inundating residential properties. A single basin at the school was anticipated by the County and its consultants to require the acquisition and relocation of one or more residential properties.

Two alternate locations for Basin 1 were considered in the vicinity of the final proposed location detailed in Alternative 2. One of the alternate locations considered was at the Saydel High School, between proposed Basins 2 and 2A; however this site would require acquisition and relocation of residential properties and was found infeasible prior to evaluating the hydrological viability. The other alternate site for Basin 1 considered was located north of the proposed location to avoid or minimize impacts to wetlands; this area contains the proposed open channel that feeds into the upland portion of the proposed Basin 1. This site for the basin was eliminated due to the change in elevation necessary to maintain adequate outflow of stormwater.

## 4. SUMMARY OF IMPACTS AND MITIGATION

Two primary alternatives, the No Action and the Proposed Action, were evaluated in this EA and their impacts summarized in this section using the following scale. Impacts are assumed to be negative unless noted otherwise. The following section, Section 5, further details the anticipated impacts of both alternatives.

- No impact – no impacts are anticipated
- Negligible impact – no discernible impacts are anticipated or are minimal and cannot be measured meaningfully
- Minor impact – anticipated impacts are measurable, but are minor and within or below regulatory standards and / or are confined to the project site(s)
- Moderate impact – anticipated impacts are measurable and / or have impacts that may extend beyond the project site(s), may require permitting, and may require limited mitigation actions or coordination to minimize negative impacts
- Major impact – anticipated impacts are readily measurable, have a regional impact, require mitigation to reduce impacts, and / or exceed existing regulatory standards; permanent changes to the resources would be expected

*Table 4-1: Summary of Impacts and Mitigation*

<b>Affected Environment</b>	<b>Impacts</b>	<b>Mitigation Measures / BMPs</b>
<b>Geology and Soils</b>		
Alternative 1	No impact	Not applicable
Alternative 2	Minor to moderate impact	Soil and erosion control Best Management Practices (BMP) and a Storm Water Pollution Prevention Plan are required
<b>Air Quality</b>		
Alternative 1	No impact	Not applicable
Alternative 2	Minor to moderate impact	BMP to minimize fugitive dust emissions appropriate to the site and scope of work are required
<b>Climate Change</b>		
Alternative 1	No impact	Not applicable
Alternative 2	Moderate (positive) impact	
<b>Water Quality</b>		
Alternative 1	Minor to moderate impact	
Alternative 2	Minor to moderate impact	SWPPP, Nationwide Pollution Discharge Elimination System (NPDES) permit, and soil and erosion control BMP are required
<b>Wetlands</b>		
Alternative 1	No impact	Not applicable

Alternative 2	Major impact	Minimization techniques will be considered during final project design; delineation of Basin 2 in addition to Basins 1 and 3 is required to determine extents of existing wetlands, Applicant must coordinate with Iowa Department of Natural Resources (IDNR) and Army Corps of Engineers (ACOE) to mitigate loss of wetlands
Floodplain		
Alternative 1	Moderate to major impact	
Alternative 2	Moderate to major (positive) impact	
Protected Species and Habitat		
Alternative 1	No impact	Not applicable
Alternative 2	No impact	If protected species are identified, further coordination with IDNR and U.S. Fish and Wildlife Service may be required; tree cutting is limited to November 16 to March 31 or to certain sizes outside of this time to protect Indiana bat habitat
Terrestrial and Aquatic Habitat		
Alternative 1	No impact	Not applicable
Alternative 2	Minor to moderate impact	BMP to discourage mosquitoes, geese, or other nuisance species is recommended
Historic Structures		
Alternative 1	No impact	Not applicable
Alternative 2	No impact	Not applicable
Archaeology		
Alternative 1	No impact	Not applicable
Alternative 2	No impact	If unanticipated archaeological deposits are encountered during construction activities, work must stop, the site must be protected, and FEMA must be notified so that the site can be evaluated and so that consultation with the State Historic Preservation Office (SHPO) re-opens; work cannot recommence until consultation is concluded
Environmental Justice		
Alternative 1	Negligible to minor impact	Flooding from stormwater over-topping existing stormwater conveyance and from sewer backups would continue to cause damage to private property, roads would continue to be closed periodically during flooding events
Alternative 2	Negligible to minor impact; minor to moderate (positive) impact long term	
Noise		
Alternative 1	No impact	Not applicable
Alternative 2	Minor to moderate impact	BMPs for noise reduction appropriate to the site and construction activities are required
Land Use and Planning		
Alternative 1	No impact	Not applicable
Alternative 2	No impact	Stormwater control appears consistent with the existing zoning and land use regulations

Transportation		
Alternative 1	Moderate impact	Road closures due to flooding should be expected to continue periodically
Alternative 2	Minor to moderate impact; moderate to major (positive) impact long term	Careful site planning, timing of work, and consideration of site access and staging is required to reduce impact to access to Saydel High School during construction of Basin 2
Public Health and Safety		
Alternative 1	No impact	Not applicable
Alternative 2	Negligible to Major impact	Unknown contamination potential was identified during site visit based on evidence of illegal dumping, additional investigation at Basin 2A and Basin 3 recommended prior to initiating work; in the event that contaminants in excess of reporting standards is encountered, work must stop, site must be stabilized, and coordination with the IDNR is required; proper handling and disposal of hazardous substances is required
Cumulative Impact		
Alternative 1	Moderate impact	Invasive plant species and illegal dumping exacerbates water quality and water detention in existing low-lying areas and conveyances, flooding of roads and private property would continue without abatement
Alternative 2	Minor to Moderate impact	Detention and slowing release of stormwater would reduce flooding of private properties and roadways as well as potential sedimentation and erosion; removal of illegally dumped materials may improve soil and water conditions in localized areas; future land use changes or other changes to hydrology of the watershed may exacerbate flooding potential at residential properties along NE 54th Avenue

## 5. AFFECTED ENVIRONMENT AND IMPACTS

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Chapter 5 describes the existing environmental conditions that may be affected by the proposed FEMA grant funding being applied toward the construction of storm water improvements within the Hamilton Drain Watershed. The environmental impacts of the No action alternative were also analyzed.

This chapter also describes the potential environmental consequences of the proposed alternatives by comparing them with the potentially affected environmental components. The proposed activity was also evaluated against existing environmental documentation on current and planned actions and information on anticipated future projects to determine the potential for cumulative impacts. The potential for significant environmental consequences was evaluated utilizing the context and intensity considerations as defined in CEQ regulations for implementing the procedural provisions of NEPA (40 CFR 1508.27).

### 5.1 PHYSICAL RESOURCES

#### 5.1.1 Geology and Soils

The subject property is located within a geomorphic region referred to as the “Des Moines Glacial Lobe.” Deposits typically encountered in the upper portion of the soil sequence in this region are Wisconsinan age glacial-derived sediments. Such sediments consist of either glacial-derived sand or glacial till, which consists of a mixture of sand, silt, and clay. Till sediments generally encountered within the upper 15 feet of the ground surface consist of silty sandy clay with interbedded silt and sand seams. These sediments generally overlay a more homogeneous deposit of silty sandy clay. Wisconsinan glacial till is underlain by Wisconsinan loess, typified by silty clay to clayey silt sediments with little or no sand. Pre-Illinoian glacial till underlies the loess at depth and consists of a well-graded mixture of silty clay and sand with lesser amounts of pebbles and cobbles. The Pre-Illinoian glacial till is underlain by the Des Moines Series of the Pennsylvanian Bedrock System. The Des Moines Series consists of alternating sequences of limestone, sandstone, shale, and coal. The general topography within the project area is from north to south toward the Des Moines River.

The Farmland Protection Policy Act (FPPA) was enacted in 1981 (P.L. 98-98) to minimize the unnecessary conversion of farmland to nonagricultural uses as a result of Federal actions. In addition, the act seeks to ensure that Federal programs are administered in a manner that will be compatible with State and Local policies and programs that have been developed to protect farmland. The policy of the Natural Resources Conservation Service (NRCS) is to protect significant agricultural lands from conversions that are irreversible and that result in the loss of essential food and environmental resources. The NRCS has developed criteria for assessing the efforts of Federal actions on converting farmland to other uses, including Farmland Conversion Impact Rating form AD-1066 that documents a site-scoring evaluation process to assess its potential agricultural value. In accordance with Section 1541 of the FPPA, the alternatives were reviewed for potential impacts on prime farmlands.

Table 5-1: Soil Types in Project Area

Map Symbol	Soil Type	Soil Description	Farmland classification
<b>Basin 1</b>			
175B	Dickinson fine sandy loam	2 to 5 percent slopes	Prime Farmland
507	Canisteo clay loam	0 to 2 percent slopes	Prime Farmland if drained
1221	Palms muck	0 to 1 percent slopes, ponded	NA
4000	Urban land	NA	NA
4107	Webster-Urban land complex	0 to 2 percent slopes	NA
5040	Orthents, loamy	NA	NA
<b>Basin 2</b>			
62E2	Storden loam	14 to 18 percent slopes, moderately eroded	Farmland of statewide importance
4138D	Clarion-Urban land complex	9 to 14 percent slopes	NA
4175C	Dickinson-Urban land complex	5 to 9 percent slopes	NA
4201B	Coland, occasionally flooded Terril-Urban land complex	2 to 5 percent slopes	NA
<b>Basin 2A</b>			
107	Webster silty clay loam	0 to 2 percent slopes	Prime Farmland if drained
138C	Clarion loam	5 to 9 percent slopes	Farmland of statewide importance
4201B	Coland, occasionally flooded Terril-Urban land complex	2 to 5 percent slopes	NA
5040	Orthents, loamy	NA	NA
<b>Basin 3</b>			
43	Bremer silty clay loam	0 to 2 percent slopes, rarely flooded	Prime Farmland if drained
135	Coland clay loam	0 to 2 percent slopes, occasionally flooded	Prime Farmland if drained
138B	Clarion loam	2 to 5 percent slopes	Prime Farmland
4135	Coland, occasionally flooded Urban land complex	0 to 2 percent slopes	NA
4946	Orthents-urban land complex	0 to 5 percent slopes	NA
<b>NE 7th Street Storm Sewer</b>			
107	Webster silty clay loam	0 to 2 percent slopes	Prime Farmland if drained
4027B	Terril-Urban land complex	2 to 5 percent slopes	NA
4946	Orthents-urban land complex	0 to 5 percent slopes	NA

### 5.1.1.1 Alternative 1 - No Action

Under the no action alternative, no construction activities would take place and no ground disturbance would occur. There would be no impact to soils classified as prime farmland or farmland of statewide importance.

### 5.1.1.2 Alternative 2 - Proposed Action

The proposed project would require grading at the proposed basin sites to promote desired drainage and detention. Soils classified as prime farmland or farmland of statewide importance would be impacted at all three basin sites and along the alignment of the NE 7<sup>th</sup> Street Storm Sewer components. Creation of

engineered detention basins would permanently convert the sites to water detention usage. Each of the proposed sites are located within areas that are substantially developed, surrounded by urbanized areas, and planned for future development within Polk County's comprehensive plan identified as within the North Central Area. FEMA has determined that for these reasons, the sites are already substantively committed to urbanization and thus would not necessitate further consultation with the NRCS or require mitigation activities for farmland impacts.

The construction of the storm water system improvements would result in temporary disturbance of surface soils in the project area and would have a moderate to major impact to soils if unmitigated. Implementation of Best Management Practices (BMP) identified in a Storm Water Pollution Prevention Plan (SWPPP) would minimize soil erosion and loss until construction is complete and the site is permanently stabilized. Impacts to geology and soils are anticipated to be minor with the incorporation of BMP as detailed in the SWPPP; see 5.2 Water Quality for further discussion of SWPPP.

### **5.1.2 Air Quality**

The 1990 Clean Air Act, its amendments, and NEPA require that air quality impacts be addressed in the preparation of environmental documents. The U.S. Environmental Protection Agency (EPA) established National Ambient Air Quality Standards (NAAQS) for six "criteria" pollutants; carbon monoxide (CO), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>), sulfur dioxide (SO<sub>2</sub>) and lead (Pb), and define the allowable concentrations that may be reached but not exceeded in a given time period to protect human health (primary standard) and welfare (secondary standard) with a reasonable margin of safety.

Primary and secondary standards for NAAQS have been established for most of the criteria pollutants which are detailed in Table 5-1: National Ambient Air Quality Standards, below. The EPA is authorized to designate those locations that have not met the NAAQS as non-attainment and to classify these non-attainment areas according to their degree of severity. Attainment pertains to the compliance/violation of any of the National Ambient Air Quality Standards (NAAQS) for the six criteria pollutants mentioned above. Each year, states are required to submit an annual monitoring network plan to EPA. The network plans provide for the creation and maintenance of monitoring stations, in accordance with EPA monitoring requirements specified in 40 CFR, Part 58. The State of Iowa's most recent Monitoring Network Plan was approved by EPA Region 7 in December 2010. The 2012 Air Monitoring Network Plan has been submitted to the EPA for approval and is no longer available on the Iowa Department of Natural Resources (IDNR) website as of the time of this writing.

The Polk County Public Works Department, Air Quality Division, is authorized by the EPA to implement and enforce the Clean Air Act and the county's code on air quality. The Polk County Air Quality Division maintains a network of four monitoring sites two in Polk County, one in Story County, and one in Warren County. The nearest monitoring site is on the roof of the county facility at 19th Street and Carpenter Avenue. As of July 20, 2012, only Pottawattamie County is considered a non-attainment area for any of the six criteria pollutants within the State of Iowa.

Table 5-2: National Ambient Air Quality Standards

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Carbon Monoxide	9 ppm (10 mg/m <sup>3</sup> )	8-hour	None	
	35 ppm (40 mg/m <sup>3</sup> )	1-hour		
Lead	0.15 mg/m <sup>3</sup>	Rolling 3-Month Average	Same as Primary	
Nitrogen Dioxide	53 ppb	Annual (Arithmetic Average)	Same as Primary	
	100 ppb	1-hour	None	
Particulate Matter (PM <sub>10</sub> )	150 mg/m <sup>3</sup>	24-hour	Same as Primary	
Particulate Matter (PM <sub>2.5</sub> )	15 mg/m <sup>3</sup>	Annual (Arithmetic Average)	Same as Primary	
	35 mg/m <sup>3</sup>	24-hour	Same as Primary	
Ozone	0.075 ppm (2008 std)	8-hour	Same as Primary	
	0.08 ppm (1997 std)	8-hour	Same as Primary	
	0.12 ppm	1-hour	Same as Primary	
Sulfur Dioxide	0.03 ppm (1971 std)	Annual (Arithmetic Average)	0.5 ppm	3-hour
	0.14 ppm (1971 std)	24-hour		
	75 ppb	1-hour	None	

Source: USEPA 2011a

### 5.1.2.1 Alternative 1 - No Action

Under the no action alternative, no construction activities would take place and no ground disturbance would occur. There would be no change to air emissions and no impact associated with this alternative.

### 5.1.2.2 Alternative 2 - Proposed Action

Under this alternative, the Proposed Action is anticipated to have minor to moderate impacts to localized air quality. Short-term emissions of criteria pollutants are anticipated during the construction phase from use of construction equipment and personal vehicles, including NO<sub>2</sub> and CO; such impacts are anticipated to be within existing regulatory limits and not significant.

The operation of motor vehicles on unpaved surfaces and the use of earthmoving equipment may also generate particulate matter. The moving and handling of soil during construction would increase the potential for emissions of fugitive dust; however, any deterioration of air quality would be a localized, short-term condition that would be discontinued when the project has been completed and disturbed soils have been stabilized or permanently covered. The proposed action would require approximately 18 months of construction and heavy equipment including; bulldozers, scrapers, and backhoes.

Construction activities are required to include BMP appropriate to the site and the scope of work to minimize fugitive dust emissions. Such measures implemented by the County's contractors and staff may include the mitigation examples below, however this is not intended to be an exhaustive list.

### Mitigation Examples

- During site preparation and construction:
  - Minimize land disturbance;
  - Suppress dust on traveled paths that are not paved through wetting, use of watering trucks, chemical dust suppressants, or other reasonable precautions to prevent dust from entering ambient air;
  - Cover trucks when hauling soil;
  - Minimize soil track-out by washing or cleaning truck wheels before leaving the construction site;
  - Stabilize the surface of soil piles; and
  - Create wind breaks.
- During site restoration:
  - Revegetate any disturbed land not used with native species in accordance with Executive Order (EO) 13112
  - Remove unused material, and
  - Remove soil piles via covered trucks.

Increases in ambient concentrations of the criteria pollutants resulting from heavy equipment would be minimal, and federal or state air quality attainment levels would not be exceeded. The proposed action is expected to have no long-term adverse impacts on the air quality of the area.

### **5.1.3 Climate Change**

Climate change encompasses changes in precipitation, sea level, temperature and other climatic variables including natural cycles and the climatic changes attributed to human actions on the environment. The EPA identifies the climate change largely associated with human actions as “abrupt climate change” occurring over decades to distinguish it from that which occurs gradually over centuries. In 2010 the CEQ issued draft guidance for Federal agencies to consider climate change in NEPA documentation. The guidance uses the EPA-defined threshold for mandatory greenhouse gas (GHG) emission reporting of 25,000 metric tons per year as a level where NEPA documents determine whether a quantitative analysis is required. This threshold is equivalent to the energy needed to power 2,300 homes for a year or the emissions from 4,600 passenger vehicles per year (USEPA, 2009).

Average daily high temperatures in the Des Moines area reach a peak comparable to the high range of national averages in July around 85 degrees Fahrenheit; average daily lows are considerably below national averages in January at about 10 degrees Fahrenheit in Des Moines compared to the low range of 30 degrees in the national averages. Average daily high temperatures in January reach about 30 degrees Fahrenheit. Des Moines area morning humidity levels compare closely to the average national levels between 75 and 85 percent, however afternoon humidity levels tend to be on the high range of the national averages, peaking around 70 percent in December. Precipitation in the Des Moines area is highest in May and closely followed by

August with four to five inches measured on average; average low precipitation levels are around one inch in December and January. Average snowfall peaks around eight inches in January in the Des Moines area (City-Data 2012).

Between 1958 and 2007, amounts of very heavy precipitation has increased by 31 percent in the Upper Midwest encompassing Iowa, Missouri, Minnesota, Michigan, Illinois, Indiana, Ohio, and Wisconsin. During the same period, the Upper Midwest experienced a 27 percent increase in the average number of days with heavy precipitation defined as the heaviest one percent of all events. Heavy downpours currently occurring one time in 20 years, on average, are projected to increase in frequency between 10 and 25 percent through the 2090s (USGCRP, 2009).

Average temperatures in the United States have increased more than two degrees Fahrenheit in the last 50 years. Average temperatures in Iowa and portions of surrounding states are projected to increase by another four to six degrees, under low-emission models, or eight to 10 degrees, under high-emission models, by the end of the century. Under current projections, Iowa can anticipate increases in flooding, heat waves, droughts, invasive plant and insect species, and insect-borne diseases (USGCRP, 2009). While data needed to predict specific events and the full range of climate impacts are still being developed, enough data is available to suggest that climatic events, such as severe storms, will be localized and will be increasingly unpredictable and severe.

#### **5.1.3.1 Alternative 1 - No Action**

Under the no action alternative, no construction activities would take place and there would be no discernible change in GHG emissions. Polk County would be responsible for assembling funding non-FEMA funding for the proposed project if the County intends to proceed with the project. Existing flooding from moderate storms would continue to result in closed roads, erosion, and damages to private properties; changes in frequency and severity of storm events would exacerbate existing conditions.

#### **5.1.3.2 Alternative 2 - Proposed Action**

FEMA has determined that the actions considered in this EA are temporary, incremental changes compared to existing conditions and the overall effects are expected to be significantly below the EPA threshold for GHG quantification and evaluation. The majority of GHG emissions result from industry, heating and cooling of buildings, and automobile non-point sources; emissions associated with this project will result from construction activities and periodic maintenance, however changes in vegetation are anticipated to have a minor, incremental loss of GHG sequestration. Some of this sequestration impact will reverse with the revegetation of the project sites and is expected to be a negligible change from current conditions.

Construction of the proposed project is expected to alleviate flooding resulting from storms up to the 25 and 50-year storms (events with the probability of occurrence in any given year of four and two percent, respectively). The basin designs also include storage capacity for 100-year storms (events with the probability of occurrence in any given year of one percent). FEMA anticipates that the project design will have a moderate positive impact on the effects of climate change in the capacity to store and slow storm events currently impacting the watershed and also events projected by climate scientists.

## 5.2 WATER RESOURCES

### 5.2.1 Water Quality

Congress enacted the Federal Water Pollution Control Act in 1948 which was reorganized and expanded in 1972 and became known as the Clean Water Act (CWA) in 1977, as amended. The CWA regulates discharge of pollutants into water with portions falling under the jurisdiction of the U.S Army Corps of Engineers (ACOE) and the EPA. Section 404 of the CWA establishes the ACOE permit requirements for discharging dredged or fill materials into Waters of the United States and traditional navigable waterways. ACOE regulation of activities within navigable waters is also authorized under the 1899 Rivers and Harbors Act. The ACOE jurisdiction extends to tributaries and wetlands where a “significant nexus” exists between the resources as articulated in two recent Supreme Court decisions known as the SWANCC and Rapanos decisions. Under the National Pollution Discharge Elimination System (NPDES) the EPA regulates both point and non-point pollutant sources, including storm water and storm water runoff. Activities that disturb one acre of ground or more are required to prepare a Storm Water Pollution Prevention Plan (SWPPP) and apply for an NPDES permit through the Iowa Department of Natural Resources (IDNR) as authorized by the EPA. The Wild and Scenic Rivers Act is another regulatory framework related to water resources; however there are no designated wild and scenic rivers in the State of Iowa.

The Hamilton Drain Watershed drains an area of approximately 4,000 acres in north central Polk County with surface water emptying into the Des Moines River. Many of the drainage ways within the watershed are intermittent streams that generally have water flowing after rain events and during the spring as the snowpack melts. Groundwater beneath the Hamilton Drain Watershed exists within two separate aquifer systems: the shallow aquifer located within the overlying glacial sediments and the deeper aquifer located in the underlying bedrock formations.

#### 5.2.1.1 Alternative 1 - No Action

Under the no action alternative, no construction would take place and there would be no direct impacts to water quality. Stormwater would continue to be infiltrated into the soil and conveyed along natural low-lying areas further downstream; flooding would continue as would backing up of sanitary and stormwater sewer during heavy rainfall events. Sediment and surface contaminants would continue to be conveyed to the locations where they naturally settle out of the stormwater, up to and including the Des Moines River.

#### 5.2.1.2 Alternative 2 - Proposed Action

Construction of the basins and associated improvements would disturb more than one acre of land at each of the basin locations; the County is required to prepare a SWPPP and obtain NPDES permit from the IDNR prior to initiating construction. Soil and erosion control BMP would be required and may consist of silt fences, silt basins, minimization of the amount of area disturbed during construction, temporary berms and dikes, drains, gravel, mulches and grasses, as appropriate. These measures would apply to haul roads and borrow sites as well as the permanent right of way as applicable to the project scope of work. Suitable storage areas and careful handling of potentially harmful materials would be required by the contractor as would appropriate sanitary facilities. Groundwater quality is not expected to be appreciably affected by construction operations.

Removal of wetlands is anticipated to reduce infiltration functions at the Basin 1 and Basin 3 locations, especially if the basins are maintained as turf grass. Numerous land-uses are located in close proximity and up-stream of the proposed improvements including industrial facilities, motor vehicle sales and repair, residences, commercial, several places of worship, the Saydel High School, and the Woodside Middle School. Stormwater runoff will continue to carry sediments, heavy metals, and petroleum from roads, parking lots, and nearby industrial land-uses in addition to fertilizers and other nutrients from residential, commercial, school, and church properties.

FEMA anticipates minor to moderate negative impacts to water quality with the replacement of existing wetlands at the Basin 1 and Basin 3 locations as dry detention basins “have only a moderate pollutant removal” effect as compared to wet detention ponds and wetlands (USEPA, 2006). Through the NPDES permitting process, the Applicant will be required to coordinate with the IDNR to determine what, if any water quality BMPs are required to address potential contaminants in the stormwater detention system.

## 5.2.2 Wetlands

In addition to the CWA, Executive Order (EO) 11990 Protection of Wetlands requires Federal agencies to avoid, to the extent practicable, adverse impacts to wetlands. Under the CWA two types of authorization are available from the ACOE for activities regulated under Section 404 of the Clean Water Act: general nationwide permits, which are issued for a specific category of similar activities and include nationwide permits defined in 33 CFR, Part 30, and individual permits issued after review of the project, project alternative, and proposed mitigation.

The 1987 *Corps of Engineers Wetlands Delineation Manual* provides the technical guidelines in identifying and delineating wetlands. The ACOE manual requires the presence of all three parameters (greater than 50 percent dominance of hydrophytic vegetation, evidence of hydric soils, and presence of hydrologic indicators) for an area to be considered a wetland. The U.S. Fish and Wildlife Service maintains the National Wetlands Inventory (NWI) maps including conventional maps, downloadable digital map data, dynamic online maps<sup>1</sup> and geographic information system (GIS) data. NWI mapping involves limited variability with regard to exact outer boundaries of a wetland; however the presence of wetland conditions and approximate size is reliable for evaluation of project alternatives and is the accepted Federal standard for wetland identification and analysis. Wetland systems were identified at the proposed Basins 1 and 3 using the NWI maps.

Federal actions within identified wetlands require the Federal agency conduct an 8-Step process, which like NEPA, requires the evaluation of alternatives prior to funding the action. FEMA’s regulations on conducting 8-Step processes are contained in 44 CFR, Part 9.5; alternatives must consider avoiding impacts to wetlands first, followed by minimizing impact. If avoiding or minimizing impacts to wetlands are not practicable in relation to the problem to be addressed, then commensurate mitigation is required as part of the proposed project. Preliminary project design and associated documentation submitted to FEMA indicated that the County

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<sup>1</sup> U.S. Fish and Wildlife Service National Wetland Inventory Geospatial Wetlands Digital Data is available at; <http://www.fws.gov/wetlands/data/index.html>

intended to mitigate wetland impacts, however did not address alternatives to avoid or minimize them. FEMA required additional documentation of the process used by the County and consultants to demonstrate that avoidance or minimization alternatives were not practicable in addressing the purpose of the proposed project.

#### **5.2.2.1 Alternative 1 - No Action**

Under the no action alternative, no construction would take place and there would be no direct impacts to wetlands. Existing wetlands would continue to hold, infiltrate, and clean stormwater entering them and area soils would continue to be saturated by the stormwater infiltration. This soil saturation may limit the soil's absorption capacity for surface runoff during events that exceed the wetlands' current capacities and function.

#### **5.2.2.2 Alternative 2 - Proposed Action**

The proposed project will require significant disturbance to the two wetland systems located at the proposed Basin 1 and proposed Basin 3 (see Appendix A, Figures 15-17). While not mapped by the NWI, FEMA site visit in September 2012 found indicators of an emergent freshwater wetland at the proposed Basin 2 location along NE 54<sup>th</sup> Avenue; standing water despite a dry summer and the presence of potential wetland plants, including common cattails (*Typha*), were identified. Additional information obtained during this site visit indicates that the area has a high water table and has presented problems for maintenance work in recent years, such as mowing and equipment access.

In response to FEMA's request for information pertaining to avoidance or minimization alternatives to wetland impacts at these two sites, the County's consultants indicated that minimization attempts will be made in the final project design. Alternatives were considered, but found to be not practicable based on geography, costs, and technical considerations. Preliminary grading plans suggest that the existing wetlands are unlikely to be preserved. FEMA recommends that the final construction plans incorporate enhanced detention wetland features, also known as stormwater wetland features, to replace existing natural water storage and infiltration functions as well as natural water quality improvement, as practicable. Such features may include revegetation with native wetland plantings, inclusion of sediment forebays, and use of salt-tolerant plant species where road salt may be wash into the basin systems, or other features and combinations of features appropriate to the project (USEPA 2012).

FEMA will require the County to conduct wetland delineation consistent with ACOE and IDNR standards and for permitting wetland disturbing activities to determine commensurate wetland mitigation. Consistent with the Polk County Zoning Code, Section 5, mitigation measures should be considered on site as practicable and must be coordinated with the ACOE and IDNR regardless of type or location of mitigation selected.

### **5.2.3 Floodplain**

EO 11988 (Floodplain Management) requires that a Federal agency avoid direct or indirect support of development within the 100-year floodplain whenever there is a practicable alternative. FEMA uses Flood Insurance Rate Maps (FIRM) to identify the floodplains for the National Flood Insurance Program (NFIP). Under EO 11988, Federal actions within the 100-year floodplain, or 500-year floodplain for critical actions, require the Federal agency conduct an 8-Step review process as detailed in 44 CFR, Part 9.5. This process,

like NEPA, requires the evaluation of practicable alternatives prior to funding an action; if a practicable action exists outside of the floodplain, the Federal agency is required to select that action.

### **5.2.3.1 Alternative 1 - No Action**

Under the no action alternative, no construction would take place and there would be no direct impacts to the floodplain. Stormwater would continue to be infiltrated into the soil and conveyed along natural low-lying areas further downstream; flooding would continue as would backing up of sanitary and stormwater sewer during heavy rainfall events.

### **5.2.3.2 Alternative 2 - Proposed Action**

The majority of the Hamilton Drain Watershed east of County Road R56 is located outside of the floodplain. All of the proposed basin and conveyance improvements are located outside of the floodplain (Appendix A, Figures 18-19). As the proposed project is designed to detain stormwater and slow its release to downstream areas, FEMA expects the project will reduce downstream flood risks with moderate to major positive impacts. The proposed Basin 2 is in close proximity to one to two residential properties along NE 54<sup>th</sup> Avenue; while Basin 2A is intended to work in tandem with Basin 2 to retain water farther away from these properties, the potential for flooding at these properties remain a potential concern in the long-term. Future changes in land use up-stream of the proposed Basin 2/2A system could affect the hydraulics and hydrology within this system such that the risk of flooding at these properties is increased. The County will be responsible for impacts of land use and development decisions that affect the design function of the basin system. Overloading due to improper maintenance or increased stormwater detention resulting from upstream land use changes to the proposed Basin 2/2A system may lead to the future need for the County to acquire and relocate these properties.

## **5.3 BIOLOGICAL RESOURCES**

### **5.3.1 Protected Species and Habitat**

The Endangered Species Act (ESA) of 1973 establishes a Federal program to conserve, protect, and restore threatened or endangered plants and animals and their habitats. ESA specifically charges Federal agencies with the responsibility of using their authority to conserve threatened or endangered species. Beginning with a windshield survey in May 2011 and followed by monthly field surveys through October 2011, Snyder & Associates conducted the initial biological evaluation of the proposed sites. As part of this initial evaluation, Snyder & Associates sent early coordination letters to the U.S. Fish and Wildlife Service (USFWS) and the IDNR with no response to the former and a June 2011 letter from the latter.

The IDNR noted that Basin 1 and the since-eliminated possible Basins 4 and 5 potentially provide habitat for the Oval Ladie's-tresses Orchid (*Spiranthes ovalis*), a state protected plant species. The IDNR also indicated that Polk County is within the range of the Indiana bat (*Myotis sodalis*), recommending that any tree clearing be coordinated with the USFWS. While the Bald eagle (*Haliaeetus leucocephalus*) has been removed from the Federal threatened and endangered species list, the species is still protected by The Bald and Golden Eagle Act and the Migratory Bird Treaty Act of 1918.

Executive Order 13112 prohibits federal agencies from funding, authorizing, or carrying out actions that are likely to cause or promote the introduction or spread of invasive species in the United States.

Table 5-3: Federally Protected Species of Polk County, Iowa

Common Name	Scientific Name	Status	Potential Occurrence at Site	Reason
Indiana bat	<i>Myotis sodalist</i>	Endangered	Possible	Living and dead trees sufficiently large to be habitat are present at the project sites
Western prairie fringed orchid	<i>Platanthera praeclara</i>	Threatened	No	No habitat
Prairie bush clover	<i>Lespedeza leptostachya</i>	Threatened	No	No habitat
Least tern	<i>Sterna antillarum</i>	Endangered	No	No habitat

### 5.3.1.1 Alternative 1 - No Action

Under the no action alternative, no construction activities would take place and there would be no impact to protected species.

### 5.3.1.2 Alternative 2 - Proposed Action

The proposed project would require the disturbing of soil and vegetation. FEMA’s threatened and endangered species geographic database was consulted and found no known occurrence of Federal protected species within the vicinity of the proposed basins or conveyance improvements. The USFWS had no response following the early coordination letter sent by Snyder & Associates early in the planning for this project. The IDNR indicated in response to Snyder & Associates’ early coordination letter that the Oval ladie’s-tresses Orchid blooms in October and required that the County or its contractors conduct a botanical survey to identify this species. With site visits concluding in October 2011, Snyder & Associates had not identified the presence of this state-protected species. Any further coordination regarding state-protected species is the responsibility of Polk County and its contractors.

Known Bald eagle nests have been identified along the Des Moines River within the metropolitan area, however site visits by FEMA and by Snyder & Associates did not identify active nets in the project area. While Bald eagle nests are not anticipated in the project area, if one is identified prior to initiating work, additional coordination with FEMA is required and additional conditions may be required. To protect the Indiana bat, tree cutting may take place from November 16 to March 31 without restriction; outside of this time period trees greater than or equal to 5 inches in diameter at human breast height must not be disturbed. If this condition cannot be met, the Applicant must coordinate with the USFWS for further guidance.

## 5.3.2 Terrestrial and Aquatic Habitat

Much of the Hamilton Drain Watershed is substantially developed with small pockets and corridors along drainage ways. Floristic surveys for the proposed basins were conducted in 2011 and May 2012 by Snyder &

Associates, Inc. Terrestrial and aquatic vascular plants were surveyed using the *releve* method of sampling consisting of non-random sampling in which the observer attempts to visit each micro-climate in an area to maximize the number of species observed. While only songbirds were identified during the survey, habitat is present for mammals such as the White-tailed deer (*Odocoileus virginianus*), Eastern cottontail rabbit (*Sylvilagus floridanus*), Grey squirrel (*Sciurus carolinensis*), and Raccoon (*Procyon lotor*). Wetlands and natural channels in the watershed provide temporary and/or intermittent habitat to species such as ducks, frogs, toads, salamanders, snakes, and turtles.

Snyder & Associates indicated that the area is currently inundated with invasive species and debris; dense vegetation in the proposed basins was observed during a site visit by FEMA in September 2012. Proposed Basin 2A consists of significant, dense vegetation with many potential locations for habitat (see Appendix B, Photos #1-4). Proposed Basin 2 is maintained largely as a prairie with diverse wetland and prairie plants present also providing many potential locations for habitat (see Appendix B, Photos #7-8). As 2012 was a dry year, areas within proposed Basin 1 that would normally be expected to be covered with standing water were dry and spongy while wetland plants were noted throughout the lower topographic areas of the proposed basin. While mapped as a NWI wetland, the proposed Basin 1 does not appear to be functioning as a healthy system with the significant density of woody species and cattails present (see Appendix B, Photos #10-13). Proposed Basin 3 is currently active cropland with a pocket of woodland in the southwest corner which is mapped as a NWI wetland; animal habitat is present and the wooded area may also be used for transient camps as well (see Appendix B, Photos #14-18).

#### **5.3.2.1 Alternative 1 - No Action**

Under the no action alternative, no construction activities would take place and there would be no impact to terrestrial and aquatic species or their habitat.

#### **5.3.2.2 Alternative 2 - Proposed Action**

Construction of the proposed basins will require the removal of vegetation and existing habitat. The County intends to minimize construction activities to limit impacts on larger, mature trees where possible. Revegetation at the end of construction will include large native species such as Silver maple (*Acer saccanium L.*), Sugar maple (*Acer saccharum*), Red-dosier dogwood (*Aornus stolonifera*), Black willow (*Salix nigra*), and Eastern cottonwood (*Populus deltoids*). In addition to large native species, the sites disturbed will be required to be replanted with native grasses and similar understory in accordance with EO 13112 (Invasive Species). Removal of existing invasive species is anticipated to be a minor to moderate positive impact. If revegetation is to include fast-growing, woody species, more maintenance may be required to ensure that the basins do not become overwhelmed by vegetation that compromises their intended function.

If water accumulates and remains in the basins for extended periods of time, the basins may attract geese which can be a nuisance to surrounding property owners. Planting of tall native grasses along the water's edge can help discourage geese from congregating at the basins. With the anticipated removal of the existing wetland system at Basin 1 and Basin 3, there is a potential for increased mosquito habitat, especially if the basins are intended to be "dry basins" and are improperly maintained or if water is able to remain in the basins for seven days or more (USEPA, 2006). This is primarily due to the disruption or removal of habitat for

mosquito predators. Planting native prairie and wetland species would provide suitable habitat for frogs and other such predators of mosquitos and encourage their return to the area for natural mosquito control.

## 5.4 CULTURAL RESOURCES

In addition to review under NEPA, consideration of impacts to cultural resources is mandated under Section 106 of the National Historic Preservation Act (NHPA), as amended and implemented by 36 CFR Part 800. Requirements include the identification of significant cultural resources that may be impacted by the undertaking. Cultural resources are prehistoric and historic sites, structures, districts, buildings, objects, artifacts, or any other physical evidence of human activity considered important to a culture, subculture, or community for scientific, traditional, religious, or other reasons.

Only those cultural resources determined to be potentially significant under NHPA are subject to protection from adverse impacts resulting from an undertaking. To be considered significant, a cultural resource must meet one or more of the criteria established by the National Park Service that would make that resource eligible for inclusion in the National Register of Historic Places (NRHP). The term “eligible for inclusion in the NRHP” includes all properties that meet the NRHP listing criteria, which are specified in the Department of Interior regulations Title 36, Part 60.4 and NRHP Bulletin 15. Sites not yet evaluated may be considered potentially eligible for inclusion in the NRHP and, as such, are afforded the same regulatory consideration as nominated properties. Whether prehistoric, historic, or traditional, significant cultural resources are referred to as “historic properties.”

An adverse effect is found when an undertaking may alter, directly or indirectly, any of the characteristics of a historic property that qualify the property for inclusion in the NRHP in a manner that would diminish the integrity of a property’s location, design, setting, materials, workmanship, feeling or association. Through FEMA’s application of the criteria of adverse effect and consultation with the SHPO, if it is determined that a selected action may constitute adverse effects to historic standing structures within the APE, FEMA would initiate adverse effects consultation with the SHPO and other consulting parties, and through the development of a Memorandum of Agreement (MOA) under Section 106, develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize or mitigate adverse effects on historic properties. Through resolution of adverse effects, FEMA would make information regarding the undertaking and effected historic properties available to the public and provide an opportunity for the public to express their views on resolving adverse effects of the undertaking on historic structures. The resultant MOA would be evidence of FEMA’s compliance with its statutory responsibilities under Section 106 of the NHPA.

For the purposes of this analysis, the term “Area of Potential Effects” (APE) as defined under cultural resources legislation, defines all historic properties that could be affected by each Alternatives’ actions and encompasses areas requiring ground disturbance (e.g. areas of grading, cut and fill, etc.) associated with the proposed Federal undertaking. For No Action Alternative and Proposed Action Alternative in this EA, the APE includes identified areas required to install the detention basins including all access and staging as well as the area associated with the installation of the storm sewer alignment sections.

## **5.4.1 Historic Properties**

FEMA has considered the potential for these alternatives to affect historic structures. Various sources were checked to determine if any previously identified historic properties are located within the APE for the two Alternatives considered for this undertaking and to determine the potential for the APEs to contain previously unidentified historic properties. This review included the NRHP and National Historic Landmarks Databases, and the Office of the State Archaeologist's (OSA) I-Sites GIS and Database, historic maps and aerial photographs available through the Iowa Geographic Map Server at Iowa State University and the University of Iowa Libraries' Iowa Digital Library.

### **5.4.1.1 Alternative 1 - No Action**

The No Action Alternative would result in no construction activities in conjunction with a federal undertaking; therefore Section 106 review would not apply.

### **5.4.1.2 Alternative 2 - Proposed Action**

FEMA has evaluated the resources within the APE of the Proposed Action. No historic standing structures were identified within the APE. FEMA and the SHPO have concurred that in the event that the Proposed Action Alternative is approved, the undertaking will result in no historic structures affected; see consultation letters dated November 7, 2011 and October 11, 2012 (Appendix C, Figures 10-11).

## **5.4.2 Archaeological Resources**

FEMA has considered the potential for the Alternatives to affect archaeological resources. Various sources were checked to determine if any previously identified historic properties, including archeological sites are located within the APE of these Alternatives and to determine the potential for the APE to contain previously unidentified historic properties. This review included the NRHP and National Historic Landmarks Databases, and the OSA I-Sites GIS and Database, historic maps and aerial photographs available through the Iowa Geographic Map Server at Iowa State University and the University of Iowa Libraries' Iowa Digital Library.

### **5.4.2.1 Alternative 1 - No Action**

The No Action Alternative would result in no construction activities in conjunction with a federal undertaking; therefore Section 106 review would not apply.

### **5.4.2.2 Alternative 2 - Proposed Action**

Due to the sensitivity for archaeological resources in the vicinity of the APE, FEMA in coordination with the SHPO requested that the applicant obtain a Phase I Archaeological Survey for this proposed action. In June of 2011, the field investigation was undertaken by Cultural Archaeological Services, of Creston Iowa. The Phase I Cultural Resources Investigation for Proposed Watershed Development Project, Hamilton Drain Watershed, Polk County, Iowa resulted in no archaeological or cultural resources identified within the APE. FEMA consulted with the SHPO regarding the methodology and findings of the investigation and concurred that the undertaking would result in no archaeological resources affected.

Due to design changes as a result of project development, the applicant revised the APE to remove some of the detention basins and propose developing other previously unevaluated basins. Cultural Archaeological Services conducted Supplementary Phase I Cultural Resources Investigations. The investigations included the entire revised APE. One archaeological site, 13PK984 was identified in the south west corner of proposed Basin 3 however that site was recommended as not eligible for listing in the NRHP.

Based on the findings of the Cultural Resources Investigations, FEMA has determined and the SHPO concurred that the proposed alternative will result in no historic properties affected, see consultation letters dated November 7, 2011 and October 11, 2012 (Appendix C, Figures 10-11).

If archaeological resources are encountered and subsequently recommended eligible for listing in the NRHP by an archaeologist who meets the Secretary of the Interior's (SOI) Professional Qualifications Standards for archaeology, construction activities on the site shall halt until FEMA has re-opened and concluded consultation with the SHPO. In the event that NRHP eligible archaeological resources may be identified and the project cannot be modified to avoid adverse effects to archaeological resources, FEMA would initiate adverse effects consultation with the SHPO and other consulting parties, and through the development of a MOA under Section 106, develop and evaluate alternatives or modifications to the undertaking that could avoid, minimize or mitigate adverse effects on historic archaeological resources. Through resolution of adverse effects, FEMA would make information regarding the undertaking and effected historic properties available to the public and provide an opportunity for the public to express their views on resolving adverse effects of the undertaking on historic standing structures. The resultant MOA would evidence FEMA's compliance with its statutory responsibilities under Section 106 of the NHPA.

## **5.5 SOCIOECONOMIC CONSIDERATIONS**

### **5.5.1 Environmental Justice**

On February 11, 1994, President William J. Clinton signed Executive Order (EO) 12898, "*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.*" The EO directs Federal agencies to focus attention on human health and environmental conditions in minority and/or low-income communities. Its goals are to achieve environmental justice, fostering non-discrimination in Federal programs that substantially affect human health or the environment, and to give minority or low-income communities greater opportunities for public participation in and access to public information on matter relating to human health and the environment. Also identified and addressed, as appropriate are, disproportionately high and adverse human health, or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States.

Approximately half of the Hamilton Drain Watershed is located within Polk County Census Tract 105 with portions extending into Census Tracts 3 through 6, within the City of Des Moines. As all portions of the proposed project and downstream drainage from the proposed project areas to the Des Moines River are fully contained within Census Tract 105, this Tract will be used to define the project area for the purpose of demographic analysis. The demographic analysis uses 2010 Decennial U.S. Census figures and terminology consisting of a 100 percent count as well as data from the Census Bureau's American Community Survey

(ACS) as averaged over a 5-year period to attain additional demographic estimates. ACS data is accompanied with a margin of error as the data are obtained through estimates; smaller sample sizes naturally result in higher margins of error.

According to the 2010 Census, 2,207 households are within the project area as defined, see Table 5-4: 2010 Census – 100 percent Count Demographics. A slightly greater proportion of the population within this area is of working age when compared to the rest of the county or the state while the proportion of children and young children is smaller than either level of comparison. The proportion of older residents of the project area is greater than at the county level, but smaller than at the state level of comparison. Similar to the proportions for the state as a whole, the project area has a significant majority white population followed by black or African American as the largest group within the non-white or minority population. The proportion of the population reporting as Hispanic or Latino of any race in the project area is comparable to the county proportion at 7.7 percent and 7.6 percent, respectively. Both comparison areas are higher than the statewide proportion of population identifying as Hispanic or Latino of any race which is at 5 percent in 2010.

Table 5-4: 2010 Census – 100% Count Demographics

Population by Age			
	Iowa	Polk County	Census Tract 105
<b>Total Population</b>	3,046,355	430,640	6,472
	100%	100%	100%
<b>Children &gt; 5</b>	202,123	32,816	303
	6.6%	7.6%	4.7%
<b>Population 5-19</b>	618,387	88,116	1,124
	20.3%	20.5%	17.4%
<b>Population 20-64</b>	1,772,957	263,163	4,269
	58.2%	61.1%	66.0%
<b>Population 65+</b>	452,888	46,545	776
	14.9%	10.8%	12.0%

Population by Race			
	Iowa	Polk County	Census Tract 105
<b>Total Population</b>	3,046,355	430,640	6,472
	100%	100%	100%
<b>White</b>	2,781,561	364,895	5,899
	91.3%	84.7%	91.1%
<b>Non-white</b>	264,794	65,745	573
	8.7%	15.3%	8.9%
<b>Hispanic, any race</b>	151,544	32,647	501
	5.0%	7.6%	7.7%

Table 5-5: 2010 Household Income and Poverty Status – ACS 5-Year Estimate

	Median HH Income		Average HH Income		Percent in Poverty	
	Estimate	Margin of Error	Estimate	Margin of Error	Estimate	Margin of Error
<b>Iowa</b>	\$48,872	± \$269	\$61,833	± \$327	11.6	± 0.2
<b>Polk County</b>	\$56,094	± \$866	\$71,821	± \$941	10.3	± 0.6
<b>Census Tract 105</b>	\$56,218	± \$5,725	\$73,075	± \$11,204	8.3	± 3.7

According to the 2010 ACS 5-year, median household incomes in the project area are comparable to the county as a whole and both are estimated to be higher than the median income for the state as a whole. The estimated percentage of population in poverty as defined in the Census is lower than both the county and state estimates. However considering the margin of error, this proportion may range from significantly lower than both comparison areas to slightly higher than the state estimate and higher than the county proportion.

#### **5.5.1.1 Alternative 1 - No Action**

Under the no action alternative, no construction activities would take place and there would be no direct impact to low income or minority populations. Stormwater would continue to be infiltrated into the soil and conveyed along natural low-lying areas further downstream; flooding would continue as would backing up of sanitary and stormwater sewer during heavy rainfall events. Flooding and sewer backups resulting from heavy storm events may indirectly impact low income or minority populations disproportionately; the level of these indirect impacts is undetermined, however.

#### **5.5.1.2 Alternative 2 - Proposed Action**

Construction of the proposed detention basins and associated conveyance improvements is anticipated to have a temporary and minor or negligible impact to low income or minority populations during construction. Long term impacts are anticipated to be positive in slowing the release of storm water and in reducing private property flooding. These positive effects are expected to be positive regardless of socio-economic or minority status for property owners adjacent to and downstream from the improvements.

### **5.5.2 Noise**

As a result of the human health and welfare impacts of uncontrolled noise, the Noise Control Act was enacted in 1972; however EPA does not have regulatory authority governing noise in local communities. In 1982, the EPA shifted on federal noise control policy and transferred the primary responsibility of regulating noise to state and local governments. The Noise Control Act of 1972 and the Quiet Communities Act of 1978 were not rescinded by Congress and remain in effect.

The term “noise” is considered unwanted or nuisance sound and is typically measured in decibels (dB). The day-night average sound level (Ldn) is the 24-hour average sound level, in dB, obtained after the addition of 10 dB to the sound levels occurring between 10 p.m. and 7 a.m. and is used by agencies for estimating sound impacts and establishing guidelines for compatible land uses. The U.S. Department of Housing and Urban Development (HUD) regulations set acceptable noise levels at 65 Ldn or less (24 CFR, Part 51). The EPA identifies a 24-hour exposure level of 70 decibels (dB) as the level of environmental noise which will prevent any measurable hearing loss over a lifetime. Likewise, levels of 55 dB outdoors and 45 dB indoors are identified as preventing activity interference and annoyance (e.g., spoken conversation, sleeping, working, recreation). The levels represent averages of acoustic energy over long periods of time such as eight hours or 24 hours rather than single events. Table 5-6, below, presents some common construction equipment with their estimated noise levels and levels at various distances. Noise regulations take into account sensitive receptors which are populations or land uses that may be impacted to a greater extent by increases in ambient noise levels. Sensitive receptors generally include museums, libraries, day care centers, schools, hospitals, and places of worship, among others.

Table 5-6: Estimated Sound Levels for Construction Equipment and Attenuation at Various Distances

Equipment	Typical Noise Level (dBA) at 50 ft. from Source <sup>1</sup>	Estimate at 100 ft.	Estimate at 200 ft.	Estimate at 500 ft.	Estimate at 1,000 ft.
Air Compressor	81	75	69	61	55
Backhoe	80	74	68	60	54
Concrete Mixer	85	79	73	65	59
Dozer	85	79	73	65	59
Generator	81	75	69	61	55
Loader	85	79	73	65	59
Paver	89	83	77	69	63
Pneumatic Tool	85	79	73	65	59
Pump	76	70	64	56	50
Saw	76	70	64	56	50
Shovel	82	76	70	62	56
Truck	88	82	76	68	62

Source: FHWA 2006

### 5.5.2.1 Alternative 1 - No Action

Under the no action alternative, no construction activities would take place and there would be no impact to the ambient noise levels or sensitive noise receptors.

### 5.5.2.2 Alternative 2 - Proposed Action

Sensitive noise receptors have been identified within 800 feet of the proposed project areas including residential neighborhoods as well as the following; Trinity Church for the Deaf, Heritage Assembly of God, and Saydel High School. The first noise receptor is not expected to be significantly impacted in part due to its location across a highway from the project area. Other potential sensitive noise receptors are located in the watershed but are 1,000 feet or more away and thus not expected to experience decibel levels high enough to constitute a significant impact.

The Proposed Action would result in temporary increases in noise levels in the vicinity of the project area for the construction of the proposed project. Construction activities would require approximately 18 months of construction and the use of heavy equipment; BMP to minimize noise impacts to the identified sensitive noise receptors are required. According to the Center for Environmental Excellence by the American Association of State Highway and Transportation Officials (AASHTO), BMPs for noise reduction include (AASHTO 2009);

- Early and frequent communication with the public;

- Planning noisier activities and equipment usage for mid-morning to mid-afternoon;
- Planning site access and staging to minimize or eliminate “back-up alarm” noise;
- Limiting equipment on site to only what is necessary;
- Imposing seasonal limitation on construction noise as spring and fall are critical times when windows are left open in residential areas;
- Using newer, “low-noise” models of equipment;
- Limiting construction activities to daylight hours;
- And, shift work to weekends rather than weeknights.

Once construction activities are completed, noise levels should return to pre-project levels. Applying BMPs for construction noise reduction is expected to minimize the short-term adverse impacts of the project. FEMA has determined that the proposed action will have no long-term adverse impacts on the noise quality of the area.

### **5.5.3 Land Use and Planning**

The Polk County Planning Division of the Public Works department is responsible for comprehensive planning and enforcement of the County’s zoning ordinance. The current comprehensive plan, Polk 2030, was adopted in May 2006 exploring trends that have taken place since the previous plan was adopted, identifying issues faced by the County, and establishing a vision and goals for the County over a 25-year horizon. As a component to the comprehensive plan, the County has specific sections related to the different geographic areas with more specific information; the proposed project is located in the North Central Area. The current zoning ordinance was adopted in September 2007 and since amended to implement the goals of the comprehensive plan.

Additional development and land use changes have taken place since the county began commissioning studies of flooding within the Hamilton Watershed in the 1970s. According to aerial imagery, development has spread to the north and east from Interstate-35 and 2<sup>nd</sup> Street, respectively; this development has advanced progressively to higher topography within the watershed (see Appendix A, Figure 26). This development has had the effect of altering the watershed by way of increased impervious surfaces upstream thus increasing the likelihood of surface runoff and reducing the ability for the watershed to infiltrate stormwater.

#### **5.5.3.1 Alternative 1 - No Action**

Under the no action alternative, no FEMA funding would be committed to the construction of a flood mitigation system within the Hamilton Drainage Watershed. There would be no impact to land use or planning issues.

#### **5.5.3.2 Alternative 2 - Proposed Action**

The proposed project is not expected to require any change to land use or planning activities; the County’s Zoning Ordinance contains applicable regulations regarding the construction and function of detention basins. The County is responsible for enforcing its land use and zoning regulations for all new construction and development proposals which may require new basins or other stormwater improvements as a condition of construction permits. Construction and long-term maintenance of the proposed improvements will require on-going coordination with neighboring properties when and if land use changes impact the hydrology and

hydraulics of the watershed. On-going coordination is also expected for regular maintenance of the basins and other stormwater improvements.

## **5.5.4 Transportation**

The Des Moines Area Metropolitan Planning Organization (DMAMPO) provides metropolitan-wide transportation planning services; the DMAMPO area also functions as the region's Transportation Management Area. The Hamilton Drain Watershed is crossed by several major routes, including Interstate 80/35 with a light network of local roads in the upstream two-thirds closer in character to rural neighborhoods than the dense grid pattern of the City of Des Moines. The southern third of the watershed contains a dense urban grid of local roads, but this infrastructure is outside of the proposed project area. As a result of periodic flooding, recurring road closures along NE 54<sup>th</sup> Street, NE 50<sup>th</sup> Street, NE 5<sup>th</sup> Street, and NE 3<sup>rd</sup> Street have been documented by the county where roads are along or cross the generalized flow of stormwater along natural drainage and along large stormwater ditches. Farther downstream from the proposed project area are recurring road closures along NW 6<sup>th</sup> Drive and NW 2<sup>nd</sup> Avenue, both along or crossing Walfley Creek downstream of the proposed Basin 3 (see Appendix A, Figure 28).

Several roadways in the project area carry significant amounts of traffic; on the eastern and western bounds of the area, NW 2<sup>nd</sup> Street and NE 14<sup>th</sup> Street, both major arterial roads, and Interstate 80/35 carry the highest volumes with approximately 15,000 annual average daily vehicle trips or more. NE Broadway Avenue, approximately one-quarter of a mile south of Basin 3 carries the highest traffic volume among the local roads, but NE 3<sup>rd</sup> Street and NE 54<sup>th</sup> Avenue, both adjacent to proposed basins, carry approximately 2,000 annual average daily vehicle trips or more. Both NE 54<sup>th</sup> Avenue and NE Broadway Avenue connect major arterial roads, however the former serves as the only vehicular access to Saydel High School. The majority of other roads in the area carry half or less of this volume (Appendix A, Figure 28).

### **5.5.4.1 Alternative 1 - No Action**

Under the no action alternative, no construction activities would take place and no further impact could be anticipated. Periodic road closures due to flooding and erosion should be expected.

### **5.5.4.2 Alternative 2 - Proposed Action**

Construction of the proposed basin and conveyance improvements would include short term construction impacts to traffic flow on the surrounding streets. Impacts are expected to include delays due to entry and exit of construction vehicles, lane closures and flaggers, and potential temporary road closures for work that extends out of the primary basin area. Unlike in more dense urban street grids, some traffic will be displaced to other routes, but not all; impacts to NE 54<sup>th</sup> Avenue presents some of the greatest potential impacts as it is the sole route for motorists to Saydel High School.

While impacts to traffic flow and timing is expected to be minor for most of the work locations, moderate impacts along NE 54<sup>th</sup> Avenue are possible though within the norms of routine public works projects in urbanized areas. Mitigation activities for impacts to NE 54<sup>th</sup> Avenue are recommended and may include planning work on Basins 2 and 2A to take place outside of the regular school year and outside of times when extracurricular activities at the school may be scheduled; careful site planning to limit equipment access to the

site in terms of location and times; and coordinating with neighboring property owners for potential alternate site access. Successful completion of the project is expected to have moderate to significant positive impacts on traffic patterns with the reduction in road closures due to flooding and erosion.

### **5.5.5 Public Health and Safety**

Hazardous wastes, as defined by the Resource Conservation and Recovery Act (RCRA), are defined as “a solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may; (1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness or; (2) pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of or otherwise managed.” Hazardous materials and wastes are regulated in Iowa by a combination of Federal and state laws. Federal regulations governing the assessment and disposal of hazardous wastes include RCRA, the RCRA Hazardous and Solid Waste Amendments, Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), Solid Waste Act, and the Toxic Substances Control Act.

Snyder & Associates undertook a Phase 1 Environmental Site Assessment in accordance with ASTM Standard Practice E 1527-05 to identify potential hazardous materials impacting the proposed Basin 1 and Basins 2 and 2A sites. The Phase 1 study reviewed historic record, aerial photography, site reconnaissance, and used the regulated materials database Environmental Data Resources to identify potential Recognized Environmental Conditions (REC). FEMA consulted the IDNR’s Facility Explorer and FEMA’s geographic database of known RECs for all three proposed basin locations and conveyance improvements.

FEMA identified two past leaking underground storage tanks using the IDNR facility explorer mapping service; one located at 5496 NE 14<sup>th</sup> Street on a parcel owned by Beason Investments (Leak #8LTC93) and the other at 5601 NE 7<sup>th</sup> Street on the Saydel Bus Garage parcel (Leak #8LTS77). The Beason site was identified for no action required in 1994 and the Sadel site is designated No Further Action; both sites are located upstream, near the proposed Basins 2 and 2A. During a site visit conducted by FEMA in September 2012, scrap metal, vinyl siding, rusted metal drums, tires, and chunks of broken concrete were identified within the area of the proposed Basin 2A. Also noted is construction equipment that, based on aerial imagery, has been abandoned or stored at the proposed Basin 2A site since the summer of 2011. Similar types of debris were identified within the wooded portion of the proposed Basin 3 site (see Appendix B, Photos #3-4 and Photos #16-18).

#### **5.5.5.1 Alternative 1 - No Action**

Under the no action alternative, soils would not be disturbed and any contaminants potentially present would remain undisturbed. Some surface-level contaminants will continue to accumulate through existing natural conveyance and break down according to natural processes in the wetlands at the Basin 1 and Basin 3 sites.

#### **5.5.5.2 Alternative 2 - Proposed Action**

Known sources of contamination are anticipated by FEMA to be a low risk to the public as a result of this project due to their no action required and no further action classifications. The presence of rusted metal drums not addressed in Snyder & Associates Phase 1 Environmental Site Assessment presents unknown risk to public health and to workers. Similarly, as the proposed location of Basin 3 was revised since the Phase 1 ESA

was conducted and due to the visibility of dumping during FEMA's September 2012 site visit, the risk of potential contaminants at this site is unknown. FEMA recommends additional investigation and evaluation of contamination potential in the vicinity of proposed Basin 2A and proposed Basin 3.

If contamination in excess of reporting requirements is met, work must stop, the site must be stabilized, and the IDNR must be contacted at Field Office #5 (515-725-0268). Work within the sensitive area cannot resume until IDNR clean-up or containment requirements are met and IDNR personnel indicate that no further assessment is needed at the site of the discovery. The City must ensure compliance with all local, state, and Federal laws regarding proper removal and disposal of asbestos containing materials, waste tires, miscellaneous debris, and lead paint, if present.

## **5.6 CUMULATIVE IMPACTS**

Cumulative effects are defined by the CEQ as the impact on the environment resulting from the incremental impacts of the evaluated actions when combined with other past, present, and reasonably foreseeable future actions, regardless of the source, such as Federal or non-Federal. Cumulative impacts can result from individually minor but collectively significant actions take over time.

Dumping of yard waste, woody debris, and other illegal dumping has the distinct potential to reduce storage capacity, affect basin outflow capacity, and to increase the accumulation of hazardous contaminants. Standing water may present opportunities for geese and/or mosquitoes to become a nuisance at and around the proposed basins; with projected climatic changes, and anticipated changes in insect-borne disease vectors, impacts to public health may occur without mitigation. Insects and insect-borne diseases may also be exacerbated if the basins are not properly maintained.

Further land-use changes approved through the County's zoning and development review procedures has the potential to alter the hydrology and hydraulics of the proposed basin and the natural drainage-ways. Overloading of the Basin 2/2A system from improper maintenance or from upstream land use changes leading to increased stormwater detained may necessitate future acquisition and relocation of one or more residential properties along NE 54<sup>th</sup> Avenue. Projected increases to frequency and severity of storms may overload the stormwater detention function and would be magnified by land use changes and improper maintenance. Regardless of potential cumulative impacts discussed here, the proposed project is expected to have more positive impacts than negative and potentially significantly more positive impacts.

## **5.7 COORDINATION AND PERMITS**

Work disturbing one acre or more of ground must have a SWPPP developed and NPDES permit from the IDNR. Sediment and erosion control BMPs must be implemented. Polk County and the City of Des Moines will issue any required local permits to its selected contractors who will be required to abide by any associated conditions according to the City and the County's standard processes. The County will be required to coordinate with the IDNR and the ACOE for appropriate permitting and implementation of wetland mitigation measures commensurate with the impacts the proposed project will have on existing systems.

If contamination in excess of reporting requirements is met, work must stop, the site must be stabilized, and the IDNR must be contacted at Field Office #5 (515-725-0268). Work within the sensitive area cannot resume until IDNR clean-up or containment requirements are met and IDNR personnel indicate that no further assessment is needed at the site of the discovery. The City must ensure compliance with all local, state, and Federal laws regarding proper removal and disposal of asbestos containing materials, waste tires, miscellaneous debris, and lead paint, if present.

Tree clearance is limited to November 16 to March 31 to protect Indiana bats; any tree cutting that cannot take place during this period on trees greater than or equal to 5 inches in diameter at human breast height must be coordinated with the USFWS. This coordination may require an incidental take permit. While Bald eagle nests have not been identified in the project area, if an active nest is identified prior to initiation of work, work should avoid the nest by at least 660 feet. If work must take place closer, then work is limited to August to Mid-January. If these conditions cannot be met, additional coordination and possible permitting from the USFWS is required.

In the event that any archaeological deposits (soils, features, or any other remnants of human activity) are uncovered during the undertaking, this project shall be halted, the applicant shall stop all work immediately in the vicinity of the discovery and take reasonable measures to avoid or minimize harm to the finds. The County will inform IHSEMD immediately, will secure all archaeological findings and restrict access to the area. IHSEMD shall notify FEMA and FEMA will consult with the SHPO and the State Archaeologist of Iowa. Work in sensitive areas may not resume until consultations are completed or until an archaeologist who meets the Secretary of the Interior's Professional Qualification Standards determines the extent and historical significance of the discovery. Work may not resume at or around the delineated archaeological deposit until the applicant is notified by IHSEMD.

Success of the project and the resulting flood control will require continued coordination between the County and property owners adjacent to proposed improvements. Coordination may also be necessary during periodic maintenance activities and for construction access and staging during such activities. Coordination between county departments may be necessary during consideration of future land use changes and evaluation of development proposals for potential impacts of impervious surfaces and the shedding of stormwater into the improved basin and conveyance system.

## 6. CONCLUSION

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The draft EA evaluated potentially significant resources that could be affected. The evaluation resulted in identification of no unmitigated significant impacts associated with the resources of climate, historic, cultural, geology and soils; floodplains; wetlands and water resources; biological resources; and environmental justice. Obtaining and implementing permit requirements along with appropriate Best Management Practices and mitigation measures will avoid or minimize any effects associated with the alternatives considered in this EA to below the level of a significant impact. Should no significant impacts be identified during the public comment period, it is recommended that a Finding of No Significant Impact (FONSI) to the human or natural environment be issued for the Proposed Action Alternative.

## 7. PARTIES CONSULTED AND REFERENCES

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### 7.1 PARTIES CONSULTED

Early coordination list and correspondence found in Appendix C Figure 1

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## 8. LIST OF PREPARERS

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