

Allen County MS4 Stormwater Finance



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Executive Summary-Allen County

In August 2003, the Indiana Department of Environmental Management (IDEM) issued regulations to implement Phase II of the NPDES MS4 program. Phase II requires smaller urbanized areas to meet six minimum control measures for pollutants in stormwater.

In anticipation of these regulations, Allen County hired Christopher B. Burke Engineering, Ltd. (CBBEL) to complete a needs assessment and to fulfill NPDES Phase II stormwater obligations for Allen County and the towns of Leo-Cedarville and Hometown in late 2001. A notice of intent (NOI) and Part A of the Stormwater Quality Management Plan (SWQMP), which is the initial application, were submitted to IDEM for each of the jurisdictions in November 2003. Subsequently, Part B Characterizations and Part C Program Implementation of the SWQMP also were submitted.

In Part C, CBBEL estimated Phase II annual compliance costs for a five-year permit period that ends in November 2008. These costs of compliance are substantial. Neither the federal government nor the state of Indiana has provided local governments funding to help pay for the costs of compliance with the Phase II requirements.

Because the costs of compliance potentially are very high, CBBEL contracted with the Center for Urban Policy and the Environment (Center) on behalf of Allen County and the two municipalities to assess alternatives for financing stormwater programs. The Center's financial analyses include the following:

- Determine funding currently available for stormwater quality related work by jurisdiction;
- Determine additional funds needed to comply with new regulations;
- Assess the public's willingness to pay new fees for new stormwater programs;
- Identify alternative sources of funding;
- Estimate potential revenues from preferred sources; and
- Provide findings and recommendations.

Based on the rough calculations in this analysis, Allen County may be able to fund Phase II activities by imposing a monthly stormwater rate of \$3.00 per month per single family residence or equivalent runoff unit (ERU). The CBBEL estimate of annual costs for Allen County is approximately \$1,074,000. At most, current expenditures that are relevant to Phase II are approximately \$480,000, which means that Allen County will need at least \$593,000 in additional revenue annually to comply. The Center and CBBEL believe these figures are



likely to be well below the additional costs that actually will be incurred.

The information in this report can be used and adapted as the implementation process progresses. As Allen County develops more refined information about the costs of Phase II activities and the databases necessary to support implementation of a new system of stormwater charges to fund Phase II activities, the new figures can be substituted for the ballpark estimates in this report. The text below provides a brief summary of the findings and recommendations found in the complete report.

Current and New Expenditures for Stormwater Programs and Phase II Compliance

The Phase II regulations will require Allen County to implement new programs that will increase costs substantially over current expenditures for stormwater programs. Allen County reported spending approximately \$2,185,000 annually on stormwater programs. Using generalized guidelines and engineering procedures, CBBEL estimates that the annual cost of Phase II compliance is approximately \$1,074,000.

Analyses of current expenditure data indicate that approximately \$480,000 of all stormwater expenditures made by Allen County may be for activities related to the six minimum control measures (MCMs) or for general compliance required under Phase II, thus offsetting somewhat the financial impact of the new regulations. The three most expensive control measures in Allen County are expected to be construction site runoff control, illicit discharge detection and elimination, and good housekeeping and pollution prevention. Construction site runoff control may cost approximately \$423,000. Illicit discharge detection and elimination may cost approximately \$218,000 annually, slightly more than one-third of expected annual costs for Phase II. Good housekeeping and pollution prevention are expected to cost approximately \$105,000 annually.

Based on these analyses, the Center estimates that Allen County will need additional spending of at least \$593,000 annually to comply with Phase II stormwater requirements. More importantly, both the Center and CBBEL believe that \$593,000 is well below the actual additional costs that will be incurred. There are a number of reasons that this estimate likely falls short of the full impact of the regulations. First, Allen County reported few expenditures in several categories of MCMs. Second, many of the current activities that count as Phase II compliance were not implemented for the expressed purpose of managing runoff and thus have not achieved measurable progress towards improvement of water quality. Third, meaningful progress towards water quality objectives may require significant new capital



expenditures for facilities to reduce pollutants in urban runoff from areas developed prior to requirements for stormwater management.

Public Support for Stormwater Charges

Center staff held a focus group with representatives of Allen County and Huntertown in July 2005 to gauge the willingness of local residents to pay new stormwater fees. The focus groups yielded the following observations:

- Participants' opinions about willingness to pay varied. Some indicated that \$2.50 to \$3.50 per month would be acceptable. Others felt that this small amount would be perceived as nickel-and-diming. While residents are expected to be generally skeptical of new stormwater charges, acceptance may vary somewhat across populations. Owner of newer homes are expected to be generally supportive.
- Participants recommended a number of strategies or messages for educating the public about the need for additional stormwater management activities and the funding to support them.
 - Create or disseminate a clear plan for management and funding. Showing physical, capital improvements is critical to acceptance.
 - Couple messages about water quantity and water quality. Messages about stormwater quality alone or stormwater management as a regulatory requirement or mandate were not expected to resonate with residents.
 - It is important to ensure the public that everyone has to pay.
 - Radio and television messages were suggested as media for public education.
- Participants indicated that using existing institutional arrangements whenever possible is desirable. These functions however will need additional staffing and resources because staff members currently are overloaded.
- Participants were supportive of collaboration that would provide cost-savings. Mapping and public education were identified as appropriate activities for collaboration.

The Center also conducted a survey of the use of stormwater fees in Indiana and a brief survey of the professional literature to determine methods used to pay for stormwater programs in communities in other states in the Midwest. The surveys show that, across Indiana, more and more communities are establishing systems of stormwater charges to fund stormwater programs. These stormwater charges typically are based on some indicator or surrogate for the volume of stormwater runoff generated by individual parcels of land. The most common basis for stormwater charges is the amount of impervious area in rooftops, driveways, or parking areas on a parcel of land.



In Indiana, communities with stormwater charges have fees for single family residences between \$1.25 and \$21.00 per month, with fees typically more than \$3.50 or more per month. Owners of nonresidential properties, including owners of properties that are exempt from property taxes, pay proportionately based on the ratio of the amount of impervious area on their parcel to the average amount of impervious area on a single family residential parcel. In most communities with stormwater charges, owners of commercial, industrial, and institutional parcels that have built stormwater retention ponds or other stormwater management facilities are eligible for at least partial rebates or credits against charges because they provide some on-site stormwater management. The magnitude of the credit typically is based on engineering analyses and established by ordinance.

Alternative Revenue Mechanisms

Most jurisdictions in Indiana and elsewhere historically have administered stormwater management programs as part of local public works departments and have financed them with the mix of revenue mechanisms used to pay for other public works operations. Allen County historically has paid for stormwater programs mainly with general revenues, development fees such as plan review and inspection fees, drainage assessments, and, on occasion, the use of motor vehicle tax receipts to pay for good housekeeping and pollution prevention. Basic functions that require funding include operation and maintenance of drainage and stormwater conveyance facilities, capital improvement projects to improve stormwater infrastructure, water quality source controls including regulatory compliance, watershed planning, and public education programs. Because specialized fees or sources of revenues like development fees or motor vehicle tax receipts cannot be used for broad-based services like maintenance of stormwater infrastructure, broad-based revenues such as property taxes or stormwater charges are the most viable options for funding a comprehensive stormwater program. Experts in public works finance and stormwater management increasingly recommend stormwater charges based on impervious area as the best option to fund stormwater programs because of opposition to increases in property taxes and because people perceive them as fair. Counties and municipalities in Indiana each can establish stormwater fees under two different statutes. These pieces of enabling legislation provide some flexibility to vary charges according to different criteria.

Potential Revenues from Stormwater Charges and Permit Fees

The Center estimated potential revenues from stormwater charges for Allen County based on two general methods with various assumptions. Although databases required for precise estimation of potential revenues are not available for Allen County, ballpark or order of magnitude estimates can be made. Estimates of potential revenues by



imposing a \$3.00 and \$5.00 monthly rate in Allen County to each ERU are:

- Allen County MS4 (unincorporated): \$1,412,000 to \$4,424,000
- Allen County non-MS4 (unincorporated): \$965,000 to \$2,814,000

Based on these rough calculations, Allen County may be able to fund Phase II activities by imposing a monthly stormwater rate of \$3.00 or less.

Key Decisions in Implementing Stormwater Charges

Allen County has indicated a desire to implement stormwater charges to fund Phase II, water quality activities. Because of both the timeline for compliance and the complexity of the processes and tasks necessary to implement stormwater charges, it is important for interested jurisdictions to recommend to elected decision-makers that they establish a system of stormwater charges. The key decisions in implementing stormwater charges include:

- The decision by a legislative body to implement the charges and authorize funding to pay for development of the system;
- Administrative and engineering decisions related to development of databases necessary for implementation;
- Financial decisions related to potential revenue generation, including decisions about the rate structure and methods of billing; and
- Political decisions related to working with the public and providing opportunities for public participation in administration of the stormwater charges.

Conclusions

The analyses in this report establish that:

- Allen County currently operates and maintains stormwater systems;
- Phase II stormwater regulations require new programs that will involve substantial costs. Allen County already operates programs that will count towards compliance but that new compliance costs will be incurred;
- Allen County presently relies on revenues from property taxes, fees for services such as plan review and site inspection, drainage assessments, and specialized fees such as motor vehicle tax revenues;



- Local governments in Indiana and elsewhere increasingly are establishing and using stormwater charges based on impervious surfaces to pay for stormwater controls;
- Participants in focus groups had varied opinions about how much of a fee local residents will be willing to pay. Some indicated between \$2.50 and \$3.50 per month would be generally acceptable. Others indicated that this might not be enough. As is typical in many communities, a minority of people will oppose any new charges;
- New stormwater charges could generate substantial revenues in Allen County. Projected revenues in this report would be sufficient to pay for most of the costs of compliance with Phase II regulations in Allen County, but probably would not be sufficient to pay for all current stormwater expenditures and new compliance costs. Allen County will need to rely on a variety of sources of revenues to fund all existing and new stormwater programs;
- Implementation of new systems of stormwater charges in Allen County will be a complex process that will involve many decisions by the local legislative bodies and departmental administrators and may require more than two years to complete;
- Allen County, Leo-Cedarville, and Hometown probably will need to develop a cost-share agreement for funding a portion of the required Phase II activities.



Executive Summary-Leo-Cedarville

In August 2003, the Indiana Department of Environmental Management (IDEM) issued regulations to implement Phase II of the NPDES MS4 program. Phase II requires smaller urbanized areas to meet six minimum control measures for pollutants in stormwater.

In anticipation of these regulations, Allen County hired Christopher B. Burke Engineering, Ltd. (CBBEL) to complete a needs assessment and to fulfill NPDES Phase II stormwater obligations for Allen County and the towns of Leo-Cedarville and Hometown in late 2001. A notice of intent (NOI) and Part A of the Stormwater Quality Management Plan (SWQMP), which is the initial application, were submitted to IDEM for each of the jurisdictions in November 2003. Subsequently, Part B Characterizations and Part C Program Implementation of the SWQMP also were submitted.

In Part C, CBBEL estimated Phase II annual compliance costs for a five-year permit period that ends in November 2008. These costs of compliance are substantial. Neither the federal government nor the state of Indiana has provided local governments funding to help pay for the costs of compliance with the Phase II requirements.

Because the costs of compliance potentially are very high, CBBEL contracted with the Center for Urban Policy and the Environment (Center) on behalf of Allen County and the two municipalities to assess alternatives for financing stormwater programs. The Center's financial analyses include the following:

- Determine funding currently available for stormwater quality related work by jurisdiction;
- Determine additional funds needed to comply with new regulations;
- Assess the public's willingness to pay new fees for new stormwater programs;
- Identify alternative sources of funding;
- Estimate potential revenues from preferred sources; and
- Provide findings and recommendations.

Leo-Cedarville adopted stormwater fees in late 2005 (\$7.20 per month per ERU). This rate should be enough to fund Phase II activities in the town as well as some water quantity activities. The CBBEL estimate of annual costs Leo-Cedarville is approximately \$42,000. At most, current expenditures that are relevant to Phase II are approximately \$2,000, which means that Leo-Cedarville will need at least \$40,000 in additional revenue annually to comply. The Center



and CBBEL believe these figures are likely to be well below the additional costs that actually will be incurred.

The information in this report can be used and adapted as the implementation process progresses. As Leo-Cedarville develops more refined information about the costs of Phase II activities, they may need to revisit their newly adopted stormwater charge. The text below provides a brief summary of the findings and recommendations found in the complete report.

Current and New Expenditures for Stormwater Programs and Phase II Compliance

The Phase II regulations will require Leo-Cedarville to implement new programs that will increase costs substantially over current expenditures for stormwater programs. Leo-Cedarville reported spending approximately \$21,000 annually on stormwater programs. Using generalized guidelines and engineering procedures, CBBEL estimates that the annual cost of Phase II compliance is approximately \$42,000.

Analyses of current expenditure data indicate that approximately \$1,900 of all Leo-Cedarville's stormwater expenditures may be for activities related to the six minimum control measures (MCMs) or for general compliance required under Phase II, thus offsetting somewhat the financial impact of the new regulations. The three most expensive control measures in Leo-Cedarville are expected to be construction site runoff control, illicit discharge detection and elimination, and good housekeeping and pollution prevention. Construction site runoff control may cost approximately \$17,000 annually. Illicit discharge detection and elimination may cost approximately \$9,000 annually. Good housekeeping and pollution prevention are expected to cost approximately \$4,000 annually.

Based on these analyses, the Center estimates that Leo-Cedarville will need additional spending of at least \$40,000 annually to comply with Phase II stormwater requirements. More importantly, both the Center and CBBEL believe that this estimate is well below the actual additional costs that will be incurred. There are a number of reasons that this estimate likely falls short of the full impact of the regulations. First, Leo-Cedarville reported few expenditures in several categories of MCMs. Second, many of the current activities that count as Phase II compliance were not implemented for the expressed purpose of managing runoff and thus have not achieved measurable progress towards improvement of water quality. Third, meaningful progress towards water quality objectives may require significant new capital expenditures for facilities to reduce pollutants in urban runoff from areas developed prior to requirements for stormwater management.



Public Support for Stormwater Charges

Center staff held a focus group with representatives of Leo-Cedarville in July 2005 to gauge the willingness of local residents to pay new stormwater fees. The focus groups yielded the following observations:

- Because opposition seems to be somewhat independent from the exact magnitude of the rate, local officials should plan their needs for water quantity and quality and adopt a sufficient rate in the beginning. A small group will be strongly opposed.
- Participants recommended a number of strategies and messages for educating residents about the need for new stormwater activities and funding.
 - Coupling messages about water quantity and quality will be most effective. Residents better understand quantity issues.
 - Focus on the capital expenditures that will be made and the particular problems that the funding will address.
 - Quality of life language and identifying the lake as a local asset are additional potential messages.
 - Identify success stories from other places.
 - Assure the public that everyone has to pay.
 - Media options include: local newspaper articles; full-page advertisements; newsletters; *Journal Gazette*; posters and pamphlets; informational flyers; and pre-produced videos.
- The town was working on establishing stormwater rates at the time of the focus group; the adoption of a stormwater utility has required the creation of a new municipal department and billing system. A stormwater fee was adopted subsequently in December 2005.
- Participants agreed that there could be significant benefits to the town by collaborating to reduce the cost of Phase II implementation.

The Center also conducted a survey of the use of stormwater fees in Indiana and a brief survey of the professional literature to determine methods used to pay for stormwater programs in communities in other states in the Midwest. The surveys show that, across Indiana, more and more communities are establishing systems of stormwater charges to fund stormwater programs. These stormwater charges typically are based on some indicator or surrogate for the volume of stormwater runoff generated by individual parcels of land. The most common basis for stormwater charges is the amount of impervious area in rooftops, driveways, or parking areas on a parcel of land.

In Indiana, communities with stormwater charges have fees for single-family residences between \$1.25 and \$21.00 per month, with fees typically more than \$3.50 or more per month. Owners of nonresidential properties, including owners of properties that are exempt from



property taxes, pay proportionately based on the ratio of the amount of impervious area on their parcel to the average amount of impervious area on a single-family residential parcel. In most communities with stormwater charges, owners of commercial, industrial, and institutional parcels that have built stormwater retention ponds or other stormwater management facilities are eligible for at least partial rebates or credits against charges because they provide some on-site stormwater management. The magnitude of the credit typically is based on engineering analyses and established by ordinance.

Alternative Revenue Mechanisms

Most jurisdictions in Indiana and elsewhere historically have administered stormwater management programs as part of local public works departments and have financed them with the mix of revenue mechanisms used to pay for other public works operations. Leo-Cedarville has used general revenues, motor vehicle tax receipts, and County Economic Development Income Tax (CEDIT) revenue to fund stormwater infrastructure improvements and also recently adopted a stormwater utility. Basic functions that require funding include operation and maintenance of drainage and stormwater conveyance facilities, capital improvement projects to improve stormwater infrastructure, water quality source controls including regulatory compliance, watershed planning, and public education programs. Because specialized fees or sources of revenues like development fees or motor vehicle tax receipts cannot be used for broad-based services like maintenance of stormwater infrastructure, broad-based revenues such as property taxes or stormwater charges are the most viable options for funding a comprehensive stormwater program. Experts in public works finance and stormwater management increasingly recommend stormwater charges based on impervious area as the best option to fund stormwater programs because of opposition to increases in property taxes and because people perceive them as fair. Counties and municipalities in Indiana each can establish stormwater fees under two different statutes. These pieces of enabling legislation provide some flexibility to vary charges according to different criteria.

Potential Revenues from Stormwater Charges and Permit Fees

The Center estimated potential revenues from stormwater charges for Leo-Cedarville based on two general methods with various assumptions. Estimates of potential revenues for Leo-Cedarville by imposing a \$3.00 and \$5.00 monthly rate to each ERU are approximately \$57,000 to \$279,000.

Leo-Cedarville estimates \$127,000 in annual revenues from its newly adopted stormwater fee (\$7.20 per month per ERU). These revenues should allow Leo-Cedarville to fund all of the estimated cost of Phase II activities and some stormwater quantity issues with revenues from its new stormwater fees.



Key Decisions in Implementing Stormwater Charges

Leo-Cedarville has adopted a stormwater utility to fund water quantity improvements and may need to augment those initial rates to address water quantity and quality. Because of both the timeline for compliance and the complexity of the processes and tasks necessary to implement stormwater charges, it is important for interested jurisdictions to recommend to elected decision-makers that they establish a system of stormwater charges. The key decisions in implementing stormwater charges include:

- The decision by a legislative body to implement the charges and authorize funding to pay for development of the system;
- Administrative and engineering decisions related to development of databases necessary for implementation;
- Financial decisions related to potential revenue generation, including decisions about the rate structure and methods of billing; and
- Political decisions related to working with the public and providing opportunities for public participation in administration of the stormwater charges.

Conclusions

The analyses in this report establish that:

- Leo-Cedarville currently operates and maintains a stormwater system;
- Phase II stormwater regulations require new programs that will involve substantial costs. Leo-Cedarville already operates programs that will count towards compliance but that new compliance costs will be incurred;
- Leo-Cedarville presently relies on revenues from property taxes, specialized fees such as motor vehicle tax revenues, and County Economic Development Income Tax (CEDIT). The town also adopted a stormwater fee late in 2005;
- Participants perceived that opposition to new fees has little relationship to the amount of the fee. As such, they suggested that the fee be set to cover the needs identified;
- Stormwater charges can generate substantial revenues in Leo-Cedarville. Projected revenues should be sufficient to pay for most of the costs of compliance with Phase II regulations and some stormwater expenditures to address quantity issues. Leo-Cedarville will need to rely on a variety of sources of revenues to fund all existing and new stormwater programs; and
- The three jurisdictions probably will need to develop a cost-share agreement for funding a portion of the required Phase II activities.





Executive Summary-Huntertown

In August 2003, the Indiana Department of Environmental Management (IDEM) issued regulations to implement Phase II of the NPDES MS4 program. Phase II requires smaller urbanized areas to meet six minimum control measures for pollutants in stormwater.

In anticipation of these regulations, Allen County hired Christopher B. Burke Engineering, Ltd. (CBBEL) to complete a needs assessment and to fulfill NPDES Phase II stormwater obligations for Allen County and the towns of Leo-Cedarville and Huntertown in late 2001. A notice of intent (NOI) and Part A of the Stormwater Quality Management Plan (SWQMP), which is the initial application, were submitted to IDEM for each of the jurisdictions in November 2003. Subsequently, Part B Characterizations and Part C Program Implementation of the SWQMP also were submitted.

In Part C, CBBEL estimated Phase II annual compliance costs for a five-year permit period that ends in November 2008. These costs of compliance are substantial. Neither the federal government nor the state of Indiana has provided local governments funding to help pay for the costs of compliance with the Phase II requirements.

Because the costs of compliance potentially are very high, CBBEL contracted with the Center for Urban Policy and the Environment (Center) on behalf of Allen County and the two municipalities to assess alternatives for financing stormwater programs. The Center's financial analyses include the following:

- Determine funding currently available for stormwater quality related work by jurisdiction;
- Determine additional funds needed to comply with new regulations;
- Assess the public's willingness to pay new fees for new stormwater programs;
- Identify alternative sources of funding;
- Estimate potential revenues from preferred sources; and
- Provide findings and recommendations.

Based on the rough calculations in this analysis, Huntertown may be able to fund Phase II activities in their respective jurisdictions by imposing a monthly stormwater rate of \$3.00 per month per single-family residence or equivalent runoff unit (ERU). The CBBEL estimate of annual costs for Huntertown is approximately \$26,000. At most, current expenditures that are relevant to Phase II are approximately \$36,000. Huntertown clearly will need to spend more than they are currently spending because they have not implemented any Phase II



activities beyond good housekeeping and pollution prevention. The Center and CBBEL believe these figures are likely to be well below the additional costs that actually will be incurred.

The information in this report can be used and adapted as the implementation process progresses. As Hometown develops more refined information about the costs of Phase II activities and the databases necessary to support implementation of a new or augmented system of stormwater charges to fund Phase II activities, the new figures can be substituted for the ballpark estimates in this report. The text below provides a brief summary of the findings and recommendations found in the complete report.

Current and New Expenditures for Stormwater Programs and Phase II Compliance

The Phase II regulations will require Hometown to implement new programs that will increase costs substantially over current expenditures for stormwater programs. Hometown reported spending approximately \$36,000 annually on stormwater programs. Using generalized guidelines and engineering procedures, CBBEL estimates that the annual cost of Phase II compliance is approximately \$26,000.

Analyses of current expenditure data indicate all stormwater expenditures reported by Hometown may be for activities related to the six minimum control measures (MCMs) or for general compliance required under Phase II, thus offsetting somewhat the financial impact of the new regulations. The three most expensive control measures in Hometown are expected to be construction site runoff control, illicit discharge detection and elimination, and good housekeeping and pollution prevention. Construction site runoff control may cost approximately \$10,000 annually. Illicit discharge detection and elimination may cost approximately \$5,000 annually, slightly less than one-fifth of expected annual costs for Phase II. Good housekeeping and pollution prevention are expected to cost approximately \$3,000 annually.

Based on these analyses, Hometown's reported spending on Phase II activities already exceeds the estimates prepared by CBBEL. Because they have not invested in many Phase II activities, they also can expect to spend more than they are currently.

More importantly, both the Center and CBBEL believe that actual costs will be well above these estimates. There are a number of reasons that this estimate likely falls short of the full impact of the regulations. First, Hometown reported few expenditures in several categories of MCMs. Second, many of the current activities that count as Phase II compliance were not implemented for the expressed purpose of managing runoff and thus have not achieved measurable progress



towards improvement of water quality. Third, meaningful progress towards water quality objectives may require significant new capital expenditures for facilities to reduce pollutants in urban runoff from areas developed prior to requirements for stormwater management.

Public Support for Stormwater Charges

Center staff held a focus group with representatives of Allen County and Hometown in July 2005 to gauge the willingness of local residents to pay new stormwater fees. The focus groups yielded the following observations:

- Participants' opinions about willingness to pay varied. Some indicated that \$2.50 to \$3.50 per month would be acceptable. Others felt that this small amount would be perceived as nickel-and-diming. While residents are expected to be generally skeptical of new stormwater charges, acceptance may vary somewhat across populations. Owner of newer homes are expected to be generally supportive.
- Participants recommended a number of strategies or messages for educating the public about the need for additional stormwater management activities and the funding to support them.
 - Create or disseminate a clear plan for management and funding. Showing physical, capital improvements is critical to acceptance.
 - Couple messages about water quantity and water quality. Messages about stormwater quality alone and stormwater management as a regulatory requirement or mandate were not expected to resonate with residents.
 - It is important to ensure the public that everyone has to pay.
 - Radio and television messages were suggested as media for public education.
- Participants indicated that using existing institutional arrangements whenever possible is desirable. These functions however will need additional staffing and resources because staff currently are overloaded.
- Participants were supportive of collaboration that would provide cost-savings. Mapping and public education were identified as appropriate activities for collaboration.

The Center also conducted a survey of the use of stormwater fees in Indiana and a brief survey of the professional literature to determine methods used to pay for stormwater programs in communities in other states in the Midwest. The surveys show that, across Indiana, more and more communities are establishing systems of stormwater charges to fund stormwater programs. These stormwater charges typically are based on some indicator or surrogate for the volume of stormwater runoff generated by individual parcels of land. The most common basis



for stormwater charges is the amount of impervious area in rooftops, driveways, or parking areas on a parcel of land.

In Indiana, communities with stormwater charges have fees for single-family residences between \$1.25 and \$21.00 per month, with fees typically more than \$3.50 or more per month. Owners of nonresidential properties, including owners of properties that are exempt from property taxes, pay proportionately based on the ratio of the amount of impervious area on their parcel to the average amount of impervious area on a single-family residential parcel. In most communities with stormwater charges, owners of commercial, industrial, and institutional parcels that have built stormwater retention ponds or other stormwater management facilities are eligible for at least partial rebates or credits against charges because they provide some on-site stormwater management. The magnitude of the credit typically is based on engineering analyses and established by ordinance.

Alternative Revenue Mechanisms

Most jurisdictions in Indiana and elsewhere historically have administered stormwater management programs as part of local public works departments and have financed them with the mix of revenue mechanisms used to pay for other public works operations. Huntertown has used general revenues and motor vehicle tax receipts. Basic functions that require funding include operation and maintenance of drainage and stormwater conveyance facilities, capital improvement projects to improve stormwater infrastructure, water quality source controls including regulatory compliance, watershed planning, and public education programs. Because specialized fees or sources of revenues like development fees or motor vehicle tax receipts cannot be used for broad-based services like maintenance of stormwater infrastructure, broad-based revenues such as property taxes or stormwater charges are the most viable options for funding a comprehensive stormwater program. Experts in public works finance and stormwater management increasingly recommend stormwater charges based on impervious area as the best option to fund stormwater programs because of opposition to increases in property taxes and because people perceive them as fair. Counties and municipalities in Indiana each can establish stormwater fees under two different statutes. These pieces of enabling legislation provide some flexibility to vary charges according to different criteria.

Potential Revenues from Stormwater Charges and Permit Fees

The Center estimated potential revenues from stormwater charges for Huntertown based on two general methods with various assumptions. Although databases required for precise estimation of potential revenues are not available for Huntertown, ballpark or order of magnitude estimates can be made. Estimates of potential revenues by imposing a \$3.00 and \$5.00 monthly rate to each ERU are approximately



\$73,000 to \$212,000. Based on these rough calculations, Huntertown may be able to fund Phase II activities by imposing monthly stormwater rates of \$3.00 or less in each jurisdiction.

Key Decisions in Implementing Stormwater Charges

Huntertown has indicated a desire to implement stormwater charges to fund Phase II, water quality activities sometime in the future. Because of both the timeline for compliance and the complexity of the processes and tasks necessary to implement stormwater charges, it is important for interested jurisdictions to recommend to elected decision-makers that they establish a system of stormwater charges. The key decisions in implementing stormwater charges include:

- The decision by a legislative body to implement the charges and authorize funding to pay for development of the system;
- Administrative and engineering decisions related to development of databases necessary for implementation;
- Financial decisions related to potential revenue generation, including decisions about the rate structure and methods of billing; and
- Political decisions related to working with the public and providing opportunities for public participation in administration of the stormwater charges.

Conclusions

The analyses in this report establish that:

- Huntertown currently operates and maintains stormwater systems;
- Phase II stormwater regulations require new programs that will involve substantial costs. Huntertown County already operates programs that will count towards compliance but that new compliance costs will be incurred;
- Huntertown presently relies on revenues from property taxes and specialized fees such as motor vehicle tax revenues;
- Local governments in Indiana and elsewhere increasingly are establishing and using stormwater charges based on impervious surfaces to pay for stormwater controls;
- Participants in focus groups had varied opinions about how much of a fee local residents will be willing to pay. Some indicated between \$2.50 and \$3.50 per month would be generally acceptable. Others indicated that this might not be enough. As is typical in many communities, a minority of people will oppose any new charges;
- New stormwater charges could generate substantial revenues in Huntertown. Projected revenues in this report would be



sufficient to pay for most of the costs of compliance with Phase II regulations in Huntertown, but probably would not be sufficient to pay for all current stormwater expenditures and new compliance costs. Huntertown will need to rely on a variety of sources of revenues to fund all existing and new stormwater programs;

- Implementation of new systems of stormwater charges in Huntertown will be a complex process that will involve many decisions by the local legislative bodies and departmental administrators and may require more than two years to complete;
- Allen County, Leo-Cedarville, and Huntertown probably will need to develop a cost-share agreement for funding a portion of the required Phase II activities.



1.0 Introduction

In the 1987 amendments to the Clean Water Act, Congress directed the U.S. Environmental Protection Agency (EPA) to control pollutants in urban stormwater runoff. EPA responded by amending the National Pollutant Discharge Elimination System (NPDES) to include a set of new regulations designed to remove pollutants from Municipal Separate Storm Sewer Systems (MS4). EPA delegated regulatory authority to some state environmental agencies such as the Indiana Department of Environmental Management (IDEM).

Phase I of the new MS4 regulations, which went into effect in 1992, required municipalities with populations greater than 100,000 to implement new sets of programs and also to regulate runoff from certain industries and activities such as construction on sites greater than five acres. In August 2003, IDEM issued regulations to implement Phase II of the NPDES MS4 program. Phase II requires smaller urbanized areas to meet six minimum control measures (MCMs) for pollutants in stormwater. In Allen County, Fort Wayne, New Haven, Leo-Cedarville, Hometown, and the urbanized unincorporated area of the county are required to comply with Phase II stormwater control measures. These control measures are: public education and outreach; public participation and involvement; illicit discharge detection and elimination; construction site runoff control; post-construction runoff control; and good housekeeping and pollution prevention.

Allen County hired Christopher B. Burke Engineering, Ltd. (CBBEL) in late 2001 to complete a stormwater needs assessment and to fulfill the county's Phase II permit obligations. Leo-Cedarville and Hometown were included in the county's Phase II permit. A notice of intent (NOI) and Part A of the Stormwater Quality Management Plan (SWQMP), which is the initial application, were submitted to IDEM for each of the jurisdictions in November 2003. CBBEL also completed Part B Characterizations and Part C Program Implementation of the SWQMP for the county and the two municipalities.

In Part C, CBBEL has estimated Phase II annual compliance costs for a five-year permit period that ends in November 2008. These costs of compliance are substantial. Neither the federal government nor the state of Indiana has provided local governments funding to help pay for the costs of compliance with the Phase II requirements. The EPA estimated that the average annual cost per household of the Phase II rule would be approximately \$9.16 (EPA, 1999). The combined MS4 areas of the three jurisdictions include 29,279 households, so the cost of Phase II compliance according to the EPA would be approximately \$239,000, \$9,000, and \$6,000 per year for Allen County, Leo-Cedarville, and Hometown, respectively. Many professionals with



experience in stormwater management, however, believe that these estimates are low, and they speculate that these estimates include only the costs of paperwork associated with compliance and not the actual, entire cost of new pollution control programs. As noted, CBBEL estimated costs as part of Part C of the respective SWQMPs. CBBEL estimated that the costs of Phase II compliance will be \$4,746,000 for the county and the two municipalities over the five-year period (CBBEL, 2005).

The three jurisdictions expect that they will need additional revenue to address stormwater management problems and meet the requirements of Phase II. In early 2005, CBBEL hired the Center for Urban Policy and the Environment (Center) to assist the three jurisdictions in identifying funding sources for the new stormwater program. The Center's financial analyses include the following:



- Determine funding currently available for stormwater quality related work by jurisdiction;
- Determine additional funds needed to comply with new regulations;
- Assess the public's willingness to pay new fees for new stormwater programs;
- Identify alternative sources of funding;
- Estimate potential revenues from preferred sources; and
- Provide findings and recommendations.

This report presents findings from the Center's finance study. The introduction presents background information about the new regulatory requirements and describes recent work to address them. Sections 2 and 3 are, respectively, a summary of current local expenditures for existing stormwater management programs and a description of costs to comply with the new regulations. Local decision-makers need the information in Sections 2 and 3 to understand the impact of the new requirements on local budgets. Section 4 is an assessment of the public's willingness to pay that includes the results of focus groups and comparisons with fees paid in other places in Indiana. Section 5 outlines alternative sources of revenue and identifies stormwater charges based on impervious surfaces as the most likely comprehensive source of new revenues in Allen County, Leo-Cedarville, and Hometown. Section 6 presents preliminary, ballpark estimates of potential revenues associated with stormwater charges on impervious area. Section 7 outlines a general approach to implementation of stormwater charges and identifies key decisions that officials in the three jurisdictions must make to implement new or augmented stormwater charges; Leo-Cedarville adopted stormwater fees in late 2005. Section 8 summarizes conclusions. Appendices A through E provide further information on many of the analytical elements within the study.

2.0 Current Expenditures for Stormwater Management

The Center's initial task was to determine current expenditures for stormwater quality related work, by jurisdiction. This information is necessary to understand the scope of existing stormwater programs and the extent to which some of the activities required under the new regulations already are being provided by different administrative and operational units in each jurisdiction. In addition, this information is needed to determine whether particular sources of funding can be used to pay for both existing and new stormwater programs.



The Center requested detailed expenditure information from each jurisdiction: Allen County, Leo-Cedarville, and Hometown. Each of the jurisdictions was asked to provide information about recent, historical expenditures from all departments that may conduct stormwater-related work. Each jurisdiction also was asked to specify whether costs were capital costs for infrastructure projects or equipment or costs for operations and maintenance.

Collection and analyses of the cost data can be complicated by a number of factors. Few jurisdictions practice cost-accounting in a way that allows costs to be allocated to particular functions, so most measures are estimates, not actual costs. Capital projects often are undertaken for multiple purposes, and the proportions of costs attributable to stormwater management typically are not available. In these cases, relevant capital costs must be estimated. In addition, capital costs often vary widely over different years, so annual expenditures must be approximated to account for this variability. Data collection also can be complicated by the fact that departments that do not have primary responsibility for stormwater management undertake some of the activities considered relevant to compliance with the Phase II regulations. For example, although household hazardous waste collection programs may help prevent pollution in stormwater runoff, the departments that administer them typically are not responsible for stormwater management, and they therefore do not keep records in a way that enables estimating the marginal costs of stormwater management. As a result, most of the costs reported are estimates made by local managers that include both line items from budget documents for particular activities and proportions of other line items considered relevant.

Jurisdictions were asked to provide data for 2003, 2004, and 2005. Table 1 presents estimates of the typical magnitude of annual expenditures for stormwater management by jurisdiction. The Center developed these estimates from more detailed spreadsheets for each jurisdiction that are included in Appendix A, Stormwater Expenditures by Jurisdiction. The estimates for Allen County and Leo-Cedarville are the average annual expenditures from 2003, 2004, and 2005. Allen County data include costs for the entire county, not just the urbanized area, because current record keeping systems do not allow cost-accounting by location of project or subarea within the county. The estimates for Hometown are for one year. In some cases, Allen County data for 2005 were reported either as "to date" figures or as annual estimates. Center staff extrapolated annual expenditures from "to date" expenditures assuming that expenditures are consistent over the entire year. These estimates of current expenditures therefore should be considered approximations rather than exact measures.

Table 1. Typical annual expenditures for stormwater services by jurisdiction.



Jurisdiction	Year	Operations & maintenance	Capital	Total	Percent capital expenditures
Allen County	2003	\$1,345,426	\$100,528	\$1,445,954	7%
	2004	\$2,340,610	\$908,838	\$3,249,448	28%
	2005	\$1,488,817	\$371,182	\$1,859,999	20%
	3-year Avg	\$1,724,951	\$460,183	\$2,185,134	21%
Leo-Cedarville	2003	\$2,642	\$0	\$2,642	0%
	2004	\$7,040	\$0	\$7,040	0%
	2005	\$1,415	\$51,338	\$52,753	97%
	3-year Avg	\$3,699	\$17,113	\$20,812	82%
Huntertown	2005/Avg Yr.	\$36,000	\$0	\$36,000	0%
All jurisdictions	2003	\$1,384,068	\$100,528	\$1,484,596	7%
	2004	\$2,383,650	\$908,838	\$3,292,488	28%
	2005	\$1,526,232	\$422,520	\$1,948,752	22%
	3-year Avg	\$1,764,650	\$477,295	\$2,241,945	21%

Allen County, Leo-Cedarville, and Huntertown spend an average of approximately \$2,185,000, \$21,000, and \$36,000 annually on stormwater programs, respectively. Figures for both Allen County and Leo-Cedarville include capital expenditures for the construction or reconstruction of new stormwater facilities.

These costs identified as related to stormwater management are quite diverse and include costs for activities that local managers historically have not considered stormwater management, per se. The reason for this is that the Phase II regulations specify a broad range of activities that potentially affect the quality of urban runoff and therefore must be addressed. For example, the annual expenditures for mowing and vegetation control and trash pickup and disposal in a number of jurisdictions were established to take care of municipal and county property prior to Phase II (see Appendix A). Although these programs were established to address general property maintenance, they potentially affect the quality of runoff and therefore are relevant to these analyses. Programs implemented to comply with Phase II requirements will build on these existing programs and activities, and some ongoing activities will, from a regulatory perspective, count as progress towards compliance. That is, to the extent each jurisdiction already is engaged in activities related to one of the six minimum control measures, IDEM will count these activities among compliance activities.

To better understand the relationship between existing activities and activities required under the new regulations, including the financial relationships, Center analysts allocated costs reported by local jurisdictions across the six minimum control measures (see Table 2). The estimates include capital and operations and maintenance (O&M)



costs as well as miscellaneous costs for administrative work associated with compliance.

A number of observations can be drawn from the data in Table 2. First, and most importantly, approximately \$480,000, \$2,000, and \$36,000 in annual expenditures in Allen County, Leo-Cedarville, and Hometown, respectively, are relevant to compliance with the Phase II regulations. Second, Allen County and Hometown have made significant expenditures on good housekeeping and pollution prevention. Allen County also has invested substantially in public education, public involvement, and miscellaneous compliance. Third, categories of expenditures diverge across jurisdictions. This result can be partially a function of the ways in which jurisdictions reported data, but also suggests that collaboration is critical to successful implementation of Phase II for the three jurisdictions.

These estimates are useful because they provide a basis for judging the relative impact of the new Phase II compliance costs and because they must be considered when decision-makers in each jurisdiction decide how to finance programs. For example, issues that warrant consideration are whether the same revenue source should be used for both capital and operating costs and whether new revenue sources should be limited to funding new Phase II activities. These issues are addressed in later sections following discussion of Phase II compliance costs.

3.0 Estimates of Phase II Compliance Costs

A second task assigned to the Center involved summarizing the additional funds needed to comply with Phase II regulatory requirements. As noted in Section 2, CBBEL completed a stormwater quality master plan and a needs assessment that included estimates of costs of compliance with Phase II regulations. These costs were submitted to IDEM in November 2003 as part of the permit application.

Tables 3 through 6 summarize the average annual compliance costs for the six minimum control measures and miscellaneous compliance required under Phase II (CBBEL, 2005). Averages for years two through five are presented because they best reflect the general order of magnitude of anticipated expenditures. CBBEL estimated these costs in the aggregate for all affected jurisdictions using standard engineering procedures and generally assumed comparable costs per household or acre across the three communities. The costs were not estimated by tabulating existing costs (as in Section 2 of this report), and the estimates were not based on detailed assessments of the existing infrastructure in each jurisdiction because these procedures were



beyond the scope of work for the task. Center research staff interpolated costs for the each of the three jurisdictions by applying relative populations from the 2000 Census.





Table 3. Annual aggregate cost estimates for NPDES Phase II activities (adapted from CBBEL, 2005).

	Nov 2003 to Dec 2004	Jan 2005 to Dec 2005	Jan 2006 to Dec 2006	Jan 2007 to Dec 2007	Jan 2008 to Nov 2008	Total	Average Years 2 Through 5
MCM 1 Public education	\$0	\$25,000	\$24,000	\$23,000	\$23,000	\$95,000	\$23,750
MCM 2 Public involvement	\$14,000	\$31,000	\$31,000	\$31,000	\$31,000	\$138,000	\$31,000
MCM 3 Illicit discharges	\$18,000	\$238,000	\$230,000	\$230,000	\$230,000	\$946,000	\$232,000
MCM 4 Construction runoff	\$13,000	\$450,000	\$450,000	\$450,000	\$450,000	\$1,813,000	\$450,000
MCM 5 Post construction	\$27,000	\$26,000	\$26,000	\$26,000	\$26,000	\$131,000	\$26,000
MCM 6 Good housekeeping	\$30,000	\$112,000	\$112,000	\$112,000	\$112,000	\$478,000	\$112,000
Misc. compliance	\$75,000	\$55,000	\$55,000	\$55,000	\$105,000	\$345,000	\$67,500
New staffing	\$0	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000	\$200,000
Total	\$177,000	\$1,137,000	\$1,128,000	\$1,127,000	\$1,177,000	\$4,746,000	\$1,142,250

Table 4. Annual cost estimates for Allen County NPDES Phase II activities (adapted from CBBEL, 2005).

	Nov 2003 to Dec 2004	Jan 2005 to Dec 2005	Jan 2006 to Dec 2006	Jan 2007 to Dec 2007	Jan 2008 to Nov 2008	Total	Average Years 2 through 5
MCM 1 Public education	\$0	\$23,500	\$22,560	\$21,620	\$21,620	\$89,300	\$22,325
MCM 2 Public involvement	\$13,160	\$29,140	\$29,140	\$29,140	\$29,140	\$129,720	\$29,140
MCM 3 Illicit discharges	\$16,920	\$223,720	\$216,200	\$216,200	\$216,200	\$889,240	\$218,080
MCM 4 Construction runoff	\$12,220	\$423,000	\$423,000	\$423,000	\$423,000	\$1,704,220	\$423,000
MCM 5 Post construction	\$25,380	\$24,440	\$24,440	\$24,440	\$24,440	\$123,140	\$24,440
MCM 6 Good housekeeping	\$28,200	\$105,280	\$105,280	\$105,280	\$105,280	\$449,320	\$105,280
Misc. compliance	\$70,500	\$51,700	\$51,700	\$51,700	\$98,700	\$324,300	\$63,450
New staffing	\$0	\$188,000	\$188,000	\$188,000	\$188,000	\$188,000	\$188,000



		0	0	0	0	0	0
Total	\$166,380	\$1,068,780	\$1,060,320	\$1,059,380	\$1,106,380	\$4,461,240	\$1,073,715

Table 5. Annual cost estimates for Leo-Cedarville NPDES Phase II activities (adapted from CBBEL, 2005).

	Nov 2003 to Dec 2004	Jan 2005 to Dec 2005	Jan 2006 to Dec 2006	Jan 2007 to Dec 2007	Jan 2008 to Nov 2008	Total	Average Years 2 through 5
MCM 1 Public education	\$0	\$925	\$888	\$851	\$851	\$3,515	\$879
MCM 2 Public involvement	\$518	\$1,147	\$1,147	\$1,147	\$1,147	\$5,106	\$1,147
MCM 3 Illicit discharges	\$666	\$8,806	\$8,510	\$8,510	\$8,510	\$35,002	\$8,584
MCM 4 Construction runoff	\$481	\$16,650	\$16,650	\$16,650	\$16,650	\$67,081	\$16,650
MCM 5 Post construction	\$999	\$962	\$962	\$962	\$962	\$4,847	\$962
MCM 6 Good housekeeping	\$1,110	\$4,144	\$4,144	\$4,144	\$4,144	\$17,686	\$4,144
Misc. compliance	\$2,775	\$2,035	\$2,035	\$2,035	\$3,885	\$12,765	\$2,498
New staffing	\$0	\$7,400	\$7,400	\$7,400	\$7,400	\$7,400	\$7,400
Total	\$6,549	\$42,069	\$41,736	\$41,699	\$43,549	\$175,602	\$42,263



Table 6. Annual cost estimates for Hunteertown NPDES Phase II activities (adapted from CBBEL, 2005).

	Nov 2003 to Dec 2004	Jan 2005 to Dec 2005	Jan 2006 to Dec 2006	Jan 2007 to Dec 2007	Jan 2008 to Nov 2008	Total	Average Years 2 through 5
MCM 1 Public education	\$0	\$575	\$552	\$529	\$529	\$2,185	\$546
MCM 2 Public involvement	\$322	\$713	\$713	\$713	\$713	\$3,174	\$713
MCM 3 Illicit discharges	\$414	\$5,474	\$5,290	\$5,290	\$5,290	\$21,758	\$5,336
MCM 4 Construction runoff	\$299	\$10,350	\$10,350	\$10,350	\$10,350	\$41,699	\$10,350
MCM 5 Post construction	\$621	\$598	\$598	\$598	\$598	\$3,013	\$598
MCM 6 Good housekeeping	\$690	\$2,576	\$2,576	\$2,576	\$2,576	\$10,994	\$2,576
Misc. compliance	\$1,725	\$1,265	\$1,265	\$1,265	\$2,415	\$7,935	\$1,553
New staffing	\$0	\$4,600	\$4,600	\$4,600	\$4,600	\$4,600	\$4,600
Total	\$4,071	\$26,151	\$25,944	\$25,921	\$27,071	\$109,158	\$26,272

Expected annual costs are approximately \$1,074,000, \$42,000, and \$26,000 for the unincorporated portions of the Allen County MS4 area, Leo-Cedarville, and Hunteertown, respectively. The three most expensive control measures are expected to be construction runoff, illicit discharge detection and elimination, and good housekeeping and pollution prevention. Construction runoff may cost approximately \$423,000, \$17,000, and \$10,000 annually in the three jurisdictions. Illicit discharge detection and elimination is expected to cost approximately \$218,000, \$9,000, and \$5,000 annually. Allen County reported small expenditures in this category for water testing. The three jurisdictions are estimated to spend approximately \$105,000, \$4,000, and \$3,000 on good housekeeping and pollution prevention. Good housekeeping and pollution prevention includes activities such as training local government employees on vegetation management, proper disposal of hazardous chemicals and hazardous materials response, creating a maintenance database, and stormwater quality project planning and construction. Each of the three jurisdictions reported significant expenditures in this category.

The projected costs can be combined with estimates of current expenditures to obtain an estimate of future total annual costs for stormwater programs by jurisdiction (Table 7). Based on data provided by the communities, Phase II is expected to increase annual costs by



approximately 49 percent, 203 percent, and 73 percent for the three jurisdictions, respectively.

Table 7. Future total annual stormwater costs.

Jurisdiction	Current Total Annual Costs	Estimated Annual Phase II Costs	Future Total Annual Costs	Percent Increase for Phase II
Allen County	\$2,185,134	\$1,073,715	\$3,258,849	49%
Leo-Cedarville	\$20,812	\$42,263	\$63,075	203%
Hunertown	\$36,000	\$26,272	\$62,272	73%
All jurisdictions	\$2,241,945	\$1,142,250	\$3,384,195	51%

For the permit period through November 2008, the estimates in Table 7 probably are somewhat high for Allen County because the estimated Phase II costs have not been adjusted to account for existing expenditures on activities that count as MCMs. Estimates for Leo-Cedarville and Hunertown are likely to be low because they do not address many expenditures for managing stormwater quantity. The estimates have not been adjusted for four reasons. The first reason is that adjustment is not feasible practically because the procedures used to develop the Phase II cost estimates were general and different than the procedures used to estimate current costs. For example, the categories used by CBBEL to estimate costs in Part C of the SWQMP were based on general guidance documents and engineering practice and do not match the categories used by local jurisdictions in their cost accounting procedures or to report costs. The lack of correspondence between categories in the two approaches makes it impractical to subtract or net out existing costs. The second reason is that the CBBEL estimates, particularly those for good housekeeping and pollution prevention, are estimates of marginal costs rather than the total cost of providing those services. The third reason is that many of the current activities that count as Phase II compliance were not implemented for the expressed purpose of managing runoff. The fourth reason is that the estimates have not been adjusted is because of the high degree of uncertainty associated with the Phase II program. The Phase II program represents a new approach to regulation and it remains unclear how IDEM will regulate local jurisdictions and enforce requirements for minimum control measures. In the long term, for example, it is unclear whether IDEM will require construction of capital facilities to treat runoff to meet water quality standards. If compliance eventually involves construction of capital facilities, the estimates of compliance costs presented in Tables 3 through 6 will be too low.

Although CBBEL's estimated costs for compliance with Phase II cannot be adjusted on an activity or categorical basis, it is possible to



make assumptions and bound the potential overlap so that lower estimates of revenue needs can be obtained. For example, the CBBEL estimate of annual costs for Allen County is approximately \$1,074,000 including miscellaneous compliance costs and estimated marginal staffing costs (see Table 8). At most, current expenditures that are relevant to Phase II are approximately \$480,000 which means that Allen County will need at least \$593,000 annually to comply. Similarly, Leo-Cedarville will need more than \$40,000 annually. Huntertown clearly will need to spend more than they are currently spending because they have not implemented any Phase II activities beyond good housekeeping and pollution prevention. Generally, both the Center and CBBEL believe that these estimates are well below the costs that actually will be incurred because jurisdictions reported few expenditures for several categories of MCMs and because many of the current activities that count as Phase II compliance were not implemented for the expressed purpose of managing runoff.

Table 8. Lower estimates of Phase II revenue needs.

Jurisdiction	Estimated Annual Phase II Costs	Estimated Average Annual Phase II Expenditure	Future Total Annual Costs
Allen County	\$1,073,715	\$480,372	\$593,343
Leo-Cedarville	\$42,263	\$1,899	\$40,364
Huntertown	\$26,272	\$36,000	>\$0*
All jurisdictions	\$1,142,250	\$518,271	>\$633,707

*Huntertown is reported at >\$0 because current expenditures are greater than the CBBEL estimates, but the community has not implemented all Phase II activities.

4.0 Public Support for Stormwater Charges

A third task assigned to the Center was to assess public willingness to pay for new stormwater programs and water quality improvement activities. The Center used two methods to make this assessment: (1) focus groups comprised of informed community leaders and key stakeholders and (2) review of the experiences of other jurisdictions and surveys conducted in other communities.

Focus Groups

On July 12, 2005, Center staff held two focus group sessions. The first session included seven representatives of Allen County and Huntertown, and the second session included six representatives of Leo-Cedarville. In the focus groups, participants were asked about how citizens would perceive various stormwater rates, what educational messages would resonate with them in explaining the need for



stormwater changes, and what billing structure would they prefer. Participants also were asked to identify the advantages to collaborating among jurisdictions and the types of activities that lend themselves of collaboration. Lists of participants, summaries of their comments and observations, and other results from the focus groups are included in Appendix B, Focus Group Results. Key findings from the focus groups were:

Allen County/Huntertown

- While residents are expected to be generally skeptical of new stormwater charges, acceptance may vary somewhat across populations. Owners of newer homes are expected to be generally supportive.
- Participants' opinions about willingness to pay varied. Some indicated that \$2.50 to \$3.50 per month would be acceptable. Others felt that this small amount would be perceived as nickel-and-diming.
- Participants recommended a number of strategies or messages for educating the public about the need for additional stormwater management activities and the funding to support them.
 - Create or disseminate a clear plan for management and funding. People will want to know what their fees are funding. Showing physical, capital improvements is critical to acceptance.
 - There was disagreement among the participants about whether water quality messages would resonate with the public. Some participants suggested that coupling messages about water quantity and water quality may be effective.
 - It is important to ensure the public that everyone has to pay.
 - Messages about stormwater management as a regulatory requirement or mandate were not expected to resonate with residents.
 - Radio and television messages were suggested as media for public education.
- Participants indicated that using existing institutional arrangements whenever possible is desirable. These functions however will need additional staffing and resources because staff currently are overloaded.
- Participants were supportive of collaboration that would provide cost-savings. Mapping and public education were identified as appropriate activities for collaboration.

Leo-Cedarville

- Recent experience with the adoption of municipal trash service suggests that residents will not embrace any stormwater fee. A small group will be strongly opposed.
- Because opposition seems to be somewhat independent from the exact magnitude of the rate, local officials should plan their



needs for water quantity and quality and adopt a sufficient rate in the beginning.

- Participants recommended a number of strategies and messages for educating residents about the need for new stormwater activities and funding.
 - Coupling messages about water quantity and quality will be most effective. Residents better understand quantity issues.
 - Focus on the capital expenditures that will be made and the particular problems that the funding will address.
 - Quality of life language and identifying the lake as a local asset are additional potential messages.
 - Identify success stories from other places.
 - Assure the public that everyone has to pay.
 - Media options include: local newspaper articles; full-page advertisements; newsletters; *Journal Gazette*; posters and pamphlets; informational flyers; and pre-produced videos.
- The town was working on establishing stormwater rates at the time of the focus group; the adoption of a stormwater utility has required the creation of a new municipal department and billing system. A stormwater fee was adopted subsequently in December 2005.
- Participants agreed that there could be significant benefits to the town by collaborating to reduce the cost of Phase II implementation.

Survey of Indiana Communities

Center staff conducted a survey of the use of stormwater fees in Indiana and a scan of the professional literature to determine methods used in communities in other states in the Midwest to pay for stormwater programs. Across Indiana and throughout the United States, an increasing number of communities are establishing systems of stormwater charges to fund stormwater programs, including both maintenance of existing infrastructure and new initiatives to comply with federal and state water quality regulations. These stormwater charges typically are based on some indicator or surrogate for the volume of stormwater runoff generated by individual parcels of land. The most common basis for stormwater charges is the amount of impervious area in rooftops, driveways, or parking areas on a parcel of land.

The most common approach to establishing stormwater charges is to obtain an estimate of the average amount of impervious area on residential properties, charge each residential property owner a set or standard fee for the average amount, and establish customized bills for each nonresidential parcel that are calculated as multiples of the average residential charge. For example, the average amount of impervious area on a residential parcel in a community typically is



between 2,000 and 3,000 square feet. This example will assume that the average amount of impervious area on a parcel is 2,500 square feet. This amount is called an equivalent runoff unit (ERU) or a single family equivalent (SFE). Assume, next, that the standard monthly charge per ERU is \$3.00. All residential properties typically are charged for one ERU, which is \$3.00 monthly or \$36.00 annually. All charges for nonresidential parcels such as businesses, factories, and schools are based on the actual amount of impervious area calculated in ERUs. For example, if there is a fast-food restaurant on a property with 10,000 square feet of impervious surface, it will be charged for four ERUs ($10,000/2,500$) and pay \$12.00 monthly or \$144.00 annually. Similarly, a large warehouse or factory with 100,000 square feet of impervious area will be charged for 40 ERUs or \$120.00 monthly (i.e., \$1,440.00 annually). In this approach, property owners pay proportionately for the runoff they generate.

Table 9 presents the results of the survey of Indiana communities. As of the summer of 2005, monthly residential stormwater charges in 29 Indiana communities ranged from \$1.25 in Indianapolis to \$21.00 in Berne, which has high rates partly because of its efforts to remediate combined sewer overflows. The mean and median monthly residential charge were \$4.56 and \$3.50, respectively. Other surveys indicate that the typical residential charge has hovered around \$3.00 per month for a number of years (<http://stormwaterfinance.urbancenter.iupui.edu/>). There is some evidence to believe that typical residential charges are now more than \$3.00 per month (<http://www.florida-stormwater.org/manual/chapter1/1-2.html>). The levels of charges imposed in other communities in Indiana and elsewhere in the







Midwest are higher than the levels of fees that many focus group participants believe would be acceptable within the three jurisdictions. Articles in the professional literature and conversations with experts in the field indicate that the number of communities with stormwater charges is increasing and that most communities have gradually increased rates over time. However, rates in most communities are not sufficient to cover completely the costs of complying with federal and state stormwater regulations.

Communities use a variety of methods to establish stormwater rates, including standard ERU methodology, and a tiered system based on the impervious area within a hierarchy of land uses. Estimates of mean impervious area per ERU range from 2,350 to 5,000 square feet. The mean for the 13 communities that use this methodology was 2,800 square feet. Many Indiana communities have established a system of credits. Credits are given for nonprofit status, on-site detention/retention facilities, direct discharge to a major water body, and educational efforts.

5.0 Alternative Revenue Mechanisms

Current Sources of Revenue

Most jurisdictions in Indiana and elsewhere historically have administered stormwater management programs as part of local public works departments and have financed them with the mix of revenue mechanisms used to pay for other public works operations. These mechanisms typically have included general revenues from property and other taxes to pay for operating expenses, revenues from general obligation bonds that are repaid with general tax revenues to pay for capital projects, and, where possible, fees for particular services such as fees for reviews of development plans or fees for building inspections. Many local jurisdictions also have occasionally used special revenue mechanisms such as community development block grants or tax increment financing (TIF) for stormwater related infrastructure improvements in particular locations when the option has been appropriate.

Because of Indiana's agricultural heritage, another mechanism sometimes used by local governments is financing through legal drains. Indiana law establishes procedures whereby groups of property owners can voluntarily assess themselves for drainage and related projects to manage water problems. These legal drains, which are managed at the county level through a drainage board, historically have been created mostly to support agriculture in rural areas. When rural areas are developed, however, the legal drains remain as a method of assessment or funding. Some local jurisdictions, including Allen County have



adapted the legal drain mechanism to help finance urban stormwater management activities.

Over time, as demands and competition for general revenues have increased, and the needs for revenues for stormwater programs have become more apparent, many jurisdictions have turned to specialized fees and charges to pay for particular programs and services, including operations and maintenance of infrastructure. These specialized fees include charges to property owners based on impervious area or other indicators of runoff. The logic or rationale for these charges is the user or polluter pays principle. From a user pays perspective, the idea is that property owners pay for their proportional use of stormwater infrastructure such as drainage swales, storm sewers, and retention and detention ponds that are sized according to anticipated volumes of runoff. The rationale for legal drains, which historically have allocated costs on acreage, is akin to the user pays rationale for stormwater charges. A polluter pays perspective, which is similar to a user pays rationale, is that the property owners pay for public programs to manage polluted runoff that leaves their properties.

Allen County, Leo-Cedarville, and Huntertown historically have operated like most other jurisdictions in Indiana and elsewhere in the United States and have paid for stormwater programs and activities with general revenues, revenues from issuance of bonds, specialized fees for services, and, occasionally, revenues from special mechanisms that fit in particular circumstances. For example, Allen County historically has paid for programs to maintain storm sewers mainly with legal drain assessments and permit fees for review of plans for retention ponds to serve new developments and for inspection of development sites. These revenues are used to pay for costs associated with development regulation, including erosion and sediment control and stormwater management on new development sites. Examples of revenues for other sources include the use of general funds and local road and street (LRS) and motor vehicle highway (MVH) funds.

Leo-Cedarville is utilizing County Economic Development Income Tax (CEDIT) revenues to pay debt service on a bond for the Grabill Road project. The road project included about \$250,000 of stormwater infrastructure improvements. Leo-Cedarville also adopted ordinances establishing a stormwater utility and stormwater fees in August 2004 and December 2005, respectively.

Property owners in some places in the county pay assessments to fund operations to maintain legal drains. These assessments typically are based on acreage and/or residential lot and not impervious area and thus are not considered equivalent to stormwater charges. That is, as a mechanism for generating revenues, they allocate costs differently. However, the revenues are being used for some of the same purposes



that stormwater charges would support. For reference, the expenditures reported in Appendix A, Stormwater Expenditures by Jurisdiction, include notations regarding sources of revenue.

Alternative Mechanisms for Generating Revenues

Local governments in Indiana potentially can use many different revenue mechanisms, including stormwater charges, to pay for stormwater programs and activities. For example, in an exhaustive study of alternative finance mechanisms, analysts in Indianapolis identified specific mechanisms that potentially could be used to pay for particular aspects of stormwater programs. An updated version of this list is provided in Appendix C, Stormwater Funding Mechanisms. Most of these mechanisms are limited to specialized circumstances, are cumbersome from an administrative perspective, or have limited application geographically. After considering these options, Indianapolis created a new system of stormwater charges based on impervious area because the system was broad based and considered most fair.

A useful way to consider general alternatives for financing stormwater programs is to consider the types of mechanisms that can be used to pay for particular activities or functions required in a comprehensive program to manage stormwater, including compliance with federal and state regulations. Table 10 identifies five basic functions that are required in a comprehensive stormwater program along with the types of revenue mechanisms that can be used to pay for them. The general functions are (1) watershed planning; (2) water quality source controls such as removal of illicit storm drain connections and construction site erosion and sediment control; (3) operations and maintenance of stormwater conveyance infrastructure such as drainage swales and storm sewers; (4) capital improvement projects to build best management practices such as retention ponds or artificial wetlands to capture and remove pollutants in runoff; and (5) public education programs to encourage people to dispose of used motor oil and other wastes properly rather than in storm drains. Although many different revenue mechanisms potentially can be used to pay for particular activities, a general revenue source is needed to pay for activities that are broad-based in the community and serve all residents and property owners.

Activities like maintenance of storm sewers, watershed planning, and public education, for example, serve the general public and therefore require broad-based sources of general revenues. The two primary, broad-based sources of revenues are property taxes (possibly supplemented by local option income taxes) and stormwater charges based on impervious area. Where activities or services can be delivered to particular individuals or places and can be separated administratively or geographically, specialized, discrete revenue



mechanisms can be used. Examples of these include permit fees for builders for new development or impact fees. From this functional perspective, although there are many potential revenue mechanisms, the number of practical alternatives is limited. Most public works and stormwater management experts recommend use of stormwater charges based on impervious area to pay for stormwater programs because the only real broad-based alternative is continued reliance on property taxes. Given the fierce competition for use of property tax revenues and citizen opposition to increases in property taxes, stormwater charges have emerged as the most viable alternative. Although they are an important part of a comprehensive finance strategy, other sources, such as impact, permit, or inspection fees, are limited to paying for particular services or improvements in particular areas and cannot be used for the broad-based activities required to provide adequate service and comply with regulations.

Table 10. A functional approach in stormwater finance.

Activity	Phase II Classification	Funding Mechanisms
1. Watershed planning	MCM 1-6	General revenues (Property, income, and sales taxes) Stormwater user charges Wagering revenue sharing
2. Capital projects - New development - Retrofit existing areas	MCM 6 Good housekeeping	Developer exactions Fees-in-lieu Bonds Sinking funds (general revenues) Legal drain assessments Tax increment financing (TIF) Other specialized funds
3. Operations & maintenance (e.g., drainage basin maintenance and cleaning)	MCM 6 Good housekeeping	General revenues Stormwater user charges Legal drain assessments
4. Water quality source controls - Enforce ordinances - Develop regulations	MCM 3 Illicit discharges MCM 4 Construction runoff MCM 5 Post construction	General revenues Plan review and inspection fees
5. Public education	MCM 1 Public education MCM 2 Public involvement MCM 6 Good housekeeping	General revenues Stormwater user charges Wagering revenue sharing

In Indiana, two different state statutes provide basic authority for implementation of comprehensive systems of local stormwater charges. These statutes are:



- Department of Stormwater Management (IC 8-1.5-5-1, et seq.)
- Municipal Sewage Works (IC 36-9-23-1, et seq.)

Municipalities can either create a separate Department of Stormwater Management Board and impose stormwater charges or adopt and administer a set of stormwater charges under the Municipal Sewage Works statute. Based on recent legislation, counties also may establish charges after creating Department of Stormwater Management Boards. The advantages and disadvantages of these approaches are summarized in Appendix D, Advantages and Disadvantages of Statutory Options. In addition, the Municipal Sewage Works statute does authorize municipalities to extend services and impose charges to urbanized areas outside municipal boundaries. Thus, there appears to be authority to develop systems of charges in areas outside boundaries of incorporated municipalities.

State law (IC 36-9-27-114) also authorizes county drainage boards to assess stormwater charges on impervious or related factors to help fund stormwater quality projects and activities. The newness of this legislation makes exact application unclear.

In summary, most jurisdictions use a combination of revenue mechanisms that include property and other taxes such as income taxes; plan review and inspection fees; grants when they are available; fines and penalties; as well as specialized sources such as tax increment finance districts or impact fees. Stormwater charges based on impervious area are the most viable alternative and local jurisdictions increasingly are relying on them. In most cases, however, local officials have found that stormwater charges do not generate sufficient revenues to eliminate the need for other sources. Most jurisdictions with stormwater charges therefore continue to use other sources after they have established stormwater charges, including property tax revenues to pay off bonds for capital projects. The next section presents estimates of potential revenues from stormwater charges in the three jurisdictions.

6.0 Potential Revenues from Stormwater Charges

Estimating potential revenues from stormwater charges in a particular jurisdiction requires three pieces of information: the number of parcels to be charged, the amount of impervious area on each parcel to be charged, and the amount of the fee or charge. If this information were available, analysts could calculate the average impervious area on each residential parcel to determine the equivalent runoff unit



(ERU), divide the amount of impervious area on each nonresidential parcel by the amount of the ERU to determine the ERUs on each nonresidential parcel, sum the residential and nonresidential ERUs, and then multiply by the charge per ERU to get an estimate of potential revenues. However, databases that include this information for Allen County and Huntertown do not exist and it was beyond the scope of this project to build them. Potential revenues from charges for these jurisdictions therefore had to be estimated using proxy measures of the number of parcels and amount of imperious area in each jurisdiction.

Leo-Cedarville completed analysis similar to the one described above in setting stormwater fees. In late 2005, the town set the monthly rate at \$7.20 per ERU. Revenues are collected quarterly and expected to yield approximately \$127,000 per year.

The Center estimated potential revenues for each jurisdiction by combining 2005 assessment data on the number of single family residential parcels with assumptions about nonresidential parcels using the procedures described below. For Allen County, potential revenues were estimated for the unincorporated area defined by the county as part of the MS4 area and for the remainder of the unincorporated area outside the MS4 boundaries. Single estimates are provided for Leo-Cedarville and Huntertown because the entirety of those jurisdictions is subject to Phase II requirements.

Potential revenues from residential units were estimated by using the number of single family residential parcels from the Allen County assessment records as basis for the estimate and multiplying the number of units times each of two potential charges for residential ERU of \$3.00 and \$5.00 per month (\$36.00 and \$60.00 per year). This approach underestimates potential revenues from residential properties because it excludes multi-family residential properties and mobile homes and may not reflect very recent building. The reason for excluding multi-family units in this approach is that these buildings do not receive standard residential stormwater charges because the amount of impervious area per unit is less. Reliance on square footage per parcel from assessment records would result in overestimates of revenues. For purposes of forecasting, an underestimate is preferred to an overestimate.

Potential revenues from nonresidential units were estimated using two different approaches. One approach involved reviewing the budgets of other jurisdictions with stormwater charges and determining the proportion of charges from nonresidential parcels. A Center researcher obtained the budgets of nine other jurisdictions and noted that residential charges on average accounted for 42 percent of total revenues while nonresidential charges on average accounted for 58



percent of total revenues.¹ The range of revenues from residential parcels was from 24 percent to 62 percent. These percentages then were used in combination with assessment data provided by the Allen County Assessor's Office for single family residential parcels to the estimates of revenues from residential² and nonresidential properties in each jurisdiction.

The second method involved use of additional assessment data. Using the parcel data, Center analysts were able to distinguish residential and employment-related or nonresidential land uses.³ Then, assuming that employment-related land use is 50 percent impervious and that the average impervious area on residential properties in Allen County is 2,800 square feet, the number of ERUs for nonresidential land use was estimated. This estimate of nonresidential ERUs was multiplied times the typical charge per ERU to obtain an estimate of potential revenues from nonresidential land uses. The estimate of 2,800 square feet for the ERU is the mean impervious area associated with residential units across Indiana jurisdictions. A more complete explanation of this methodology is provided in Appendix E, Methodology for Estimating Stormwater Charge Revenues.

After completion of the base analyses, Fort Wayne annexed a large portion of Aboite Township including approximately 10,000 single family residences. This action, in January 2006, decreased the Allen County MS4 area and diminishes the expected revenues estimated using each of the three methodologies. To account for this change, 10,000 single family parcels were subtracted from the Allen County MS4 area in each of the three scenarios.

Tables 11 through 13 present estimates based on the two general approaches. Approach 1A assumes that nonresidential revenues are 58 percent of total revenues, the percentage from nonresidential parcels in other jurisdictions. Approach 1B assumes that residential parcels account for just 24 percent of total revenues and should be considered an upper bound. Approach 2 is based on the analyses of assessment data described above. It is our experience that very small towns and unincorporated, non-MS4 areas often have very limited nonresidential development, making Approaches 1A and 1B less effective as tools for estimation.

Several conclusions can be drawn from the estimates in Tables 11 through 13. It is clear that jurisdictions in Allen County

¹ Greg Lindsey. 1988. *A Survey of stormwater utilities*. Baltimore: Stormwater Management Administration, Maryland Department of the Environment.

² Residential revenues were estimated using only parcels coded as single family (510-515).

³ Employment-related revenues were estimated using parcels coded as industrial (300-399) and commercial (400-482).



potentially can generate substantial revenues from stormwater charges. For Allen County and Huntertown, the estimates based on assessment records fall within the bounds estimated by assuming that the proportions of revenues from nonresidential land use are comparable to other jurisdictions. For Leo-Cedarville, estimated revenues for the new utility fall in line with the revenue estimates using Approach 2. These results increase confidence that the range of estimates presented is realistic. More importantly, however, the results indicate that the jurisdictions probably can use stormwater charges to finance many of the Phase II activities (see Tables 7 and 11 through 13). Allen County, for example, has average annual costs of about \$2.2 million and may face costs more than \$1.1 million for Phase II, making annual costs about \$3.3 million. Assuming a stormwater department that serves the entire unincorporated area, current approximations indicate Allen County could generate between \$2.4 and \$4.0 million annually with a \$3.00 monthly rate per ERU. If only the county's MS4 area were subject to a \$3.00 per month rate, the county could generate between \$1.4 and \$2.7 million. A \$5.00 monthly rate per ERU applied to the entire unincorporated area would yield between \$4.0 and \$6.9 million annually. Similarly, if applied only to the county's MS4 area, it would yield between \$2.3 and \$4.4 million. Based on these rough analyses, Allen County may be able to provide Phase II services with a monthly rate of less than \$3.00. Huntertown could fund Phase II activities with a monthly rate of \$3.00 or less. Leo-Cedarville's chosen rate (\$7.20) will cover estimated Phase II costs as well as some stormwater quantity costs.

Table 11. Potential annual revenues for stormwater charges using Approach IA (Nonresidential = 58% of total).

Jurisdiction	Single family parcels (2005)	Annual revenues from residential properties		Total revenues	
		\$3.00/ER U	\$5.00/ER U	\$3.00/ER U	\$5.00/ER U
Allen County MS4 (unincorporated)	16,474	\$593,064	\$988,440	\$1,412,057	\$2,353,429
Allen County non-MS4 (unincorporated)	11,256	\$405,216	\$675,360	\$964,800	\$1,608,000
Leo-Cedarville	1,115	\$40,140	\$66,900	\$95,571	\$159,286
Huntertown	848	\$30,528	\$50,880	\$72,686	\$121,143

Table 12. Potential annual revenues for stormwater charges using Approach IB (Nonresidential = 76% of total).

Jurisdiction	Single family parcels (2005)	Annual revenues from residential properties		Total revenues	
		\$3.00/ER U	\$5.00/ER U	\$3.00/ER U	\$5.00/ER U



Allen County MS4 (unincorporated)	16,474	\$593,064	\$988,440	\$2,471,100	\$4,118,500
Allen County non-MS4 (unincorporated)	11,256	\$405,216	\$675,360	\$1,688,400	\$2,814,000
Leo-Cedarville	1,115	\$40,140	\$66,900	\$167,250	\$278,750
Huntertown	848	\$30,528	\$50,880	\$127,200	\$212,000

Table 13. Potential annual revenues for stormwater charges using Approach 2 (estimates of nonresidential based on assessment records).

Jurisdiction	Single family parcels (2005)	Annual revenues from residential properties		Total revenues	
		\$3.00/ER U	\$5.00/ER U	\$3.00/ER U	\$5.00/ER U
Allen County MS4 (unincorporated)	16,474	\$593,064	\$988,440	\$2,654,563	\$4,424,271
Allen County non-MS4 (unincorporated)	11,256	\$405,216	\$675,360	\$1,357,727	\$2,262,878
Leo-Cedarville	1,115	\$40,140	\$66,900	\$56,897	\$94,828
Huntertown	848	\$30,528	\$50,880	\$94,366	\$157,277

7.0 Implementing Stormwater Charges

Leo-Cedarville already has created a stormwater utility to address stormwater quantity issues. Allen County and Huntertown have stated interest in implementing charges at some time in the future.

The implementation of a system of stormwater charges for managing water quantity and/or quality is a complex process that involves a set of legislative, administrative, engineering, and financial decisions, and systematic work by professional staff and consultants over a period of one to two years. Increasing a current system of charges to include Phase II costs, also will involve a number of similar tasks. The key decisions in this process include the decision by a legislative body to implement the charges and authorize funding to pay for development of the system; administrative and engineering decisions related to development of databases necessary for implementation; financial decisions related to potential revenue generation, including decisions about the rate structure and methods of billing; and political decisions related to working with the public and providing opportunities for public participation in administration of the stormwater charges.



Legislative Decisions to Implement Charges

To implement or adjust a set of charges, the elected legislative bodies in Allen County, Leo-Cedarville, and Huntertown must act. As noted previously, municipalities in Indiana can implement stormwater charges under two different enabling statutes. Recent legislation also provided counties with the statutory authority to implement charges. Each jurisdiction has its own set of rules that govern the introduction and adoption of ordinances that typically involve requirements for opportunities for public comment. To move forward with implementation, therefore, each of the jurisdictions must work with county commissioners, and town and county councils to draft and pass necessary ordinances. Council members likely will want evidence that the proposed charges are both necessary and will be supported by the public.

For the two jurisdictions that have not yet adopted a stormwater utility, one general approach to implementation might involve the following steps:

- Representatives of Allen County and Huntertown could endorse separately the adoption of charges in their respective jurisdictions;
- Representatives from each jurisdiction could approach key decision-makers about moving forward with new charges;
- Legislative bodies could consider and adopt charges.

After ordinances are adopted under the selected enabling legislation, jurisdictions could move forward with work to develop the systems of charges.

The Leo-Cedarville Town Council should follow a similar process in considering supplementing its current stormwater rate to include the costs of Phase II.

Administrative and Engineering Decisions in Development of Stormwater Charges

Work to implement systems of charges involves a set of decisions to develop the databases and other information necessary to establish charges and to obtain more precise estimates of the revenues that can be generated in each jurisdiction. Among the most important administrative and engineering decisions are decisions about (1) integrating new charges into the existing systems of generating revenues, (2) procedures for imposition of charges on properties that are annexed, and (3) procedures to estimate the average amount of impervious area on residential parcels and the actual impervious area on each nonresidential parcel.



With respect to determining amounts of impervious area, each jurisdiction would need to estimate square footage of impervious area that would be used as the equivalent runoff unit (ERU). Key steps in developing the databases for the charge system include:

- Determining whether county and municipal staff or consultants will be assigned the task of developing databases;
- Assembling the necessary parcel information, aerial photography, and GIS capacity to develop the databases; and
- Choosing the specific procedures for measuring impervious area.

Because they are interdependent, these decisions must be made in the context of other decisions such as the method of billing.

Depending on the mechanism chosen, a major challenge in implementing a system of charges in Allen County may involve integrating the system of charges into the current system of using legal drains to fund and manage stormwater. Factors that must be considered in addressing this challenge include the purposes for which legal drain assessments and stormwater charges can be used and the geographic area over which assessments and charges are or could be imposed. County officials estimate that at least one-quarter of the parcels in unincorporated areas are part of a legal drain, but that assessments have not been established for all existing drains. New developments are required by county ordinance to become legal drains, it is not anticipated that all unincorporated areas in the county will become part of legal drains. In addition, legal drains historically have been used only for projects related to quantity of stormwater, not quality. Hence, from both geographic and managerial perspectives, legal drains are not a comprehensive solution to the stormwater financing issue. If a system of stormwater charges is developed to complement and supplement the system of legal drains, care must be taken to avoid charging property owners twice for the same service.

A second challenge involves clarification of procedures for imposing charges on property that is annexed into incorporated areas. Procedures for determining how legal drains are managed and integrated into municipal systems must be developed. From a financial perspective, procedures are essential to ensure that charges are not duplicative, and from an engineering perspective, coordination is needed to make sure objectives for management stormwater quality are met.

As noted, some but not all property owners in unincorporated areas already are paying assessments for stormwater quantity management. None presently are paying charges for stormwater quality management. To integrate systems and avoid double-charging, it may be necessary to consider creative approaches that involve two-part charges for



stormwater quantity and quality, with exemptions for quantity charges for property owners who are part of a legal drain. Table 14 is an illustrative example of factors that must be considered to address these types of problems. As local officials move forward, data on the numbers of local drains and the geographic areas they serve may be needed to finalize the design of a new system of charges and to determine the revenues associated with the new system.



Table 14. Considerations in integrating new stormwater charges with legal drains.

Area to be Served	Management of Stormwater Quantity	Management of Stormwater Quality
Incorporated areas (municipalities)	Procedures for integrating legal drains into municipal finance systems must be established	New service – no duplication of charges or assessments; systems for integrating must be established
Unincorporated areas		
Legal Drain (quantity only)	Stormwater charges could be viewed as duplicative and result in litigation over double charging	New service – no duplication of charges or assessments
Mutual Drain (recent activity)	Would be new institutional arrangement involving government; property owners could view as unnecessary	New service – no duplication of charges or assessments
Other (no activity)	Stormwater charges may be unwanted but no plausible argument of redundancy exists	New service – no duplication of charges or assessments

Financial Decisions Related to Revenue Generation

Financial decisions in implementation of charges include determining the mix of revenues from different sources to be used to finance the overall program, the charge per ERU, details of the rate structure, and the method of billing. As noted, it is likely that the revenues from charges will not be sufficient to fund all necessary stormwater quantity and quality functions and that decision-makers in each jurisdiction will need to continue to rely partially on property and other taxes, fees for services, and revenues from other sources. Because revenues from charges depend on the charge per ERU and estimates of total ERUs in each jurisdiction, decisions about the activities to fund with different revenues must be made as work to develop the billing database proceeds.

The charge per ERU will depend primarily on political judgments about the size of a charge that populations in the jurisdictions will support. Once this amount is determined, estimation of total revenues will be a straightforward process of multiplying the charge per ERU times the total number of ERUs in each jurisdiction.

Development of the rate structure will involve a set of decisions about how to charge different classes of properties and whether to grant credits against charges for on-site controls. For example, each jurisdiction must decide how to charge properties owned by tax-exempt nonprofit organizations and other public entities such as school districts. These properties are charged in most stormwater charge systems, although in some places properties owned by public entities are not charged.



Allen County also may need to consider the establishment and structure of differential stormwater rates. Enabling legislation allows the establishment of differential stormwater rates based on a number of criteria. In light of this, Allen County will need to consider carefully the coverage of particular services, the costs associated with each of these activities, the potential revenues from the county's MS4 area and the remaining unincorporated area, cost-sharing revenue from Leo-Cedarville and Huntertown for collaborative activities, and other available revenues. Allen County may want to expand the MS4 area prior to the adoption of stormwater charges to include areas that are likely to be urbanized during the current permit period.

Another important decision involves the method of billing. Most jurisdictions that establish stormwater charges add fees to existing billing systems such as water and sewer bills or property tax bills, although others create new billing systems. The choice of billing method depends on the particulars of existing systems and which system can be modified most easily to accommodate the stormwater bills.

After administrative staff, attorneys, and engineering consultants have completed work to develop the charge systems, additional action by legislative and fiscal bodies in Allen County and Huntertown to set the charges per ERU and adopt the rate structures likely will be required. The Leo-Cedarville Town Council should follow a similar process in considering supplementing its current stormwater rate to include the costs of Phase II.

Political Decisions Related to Public Participation

Most communities that have established stormwater charges have found that public participation is a key to implementation. In addition to establishing an advisory committee to assist with planning efforts, many communities have planned systematic public education campaigns and reached out to community groups and other important stakeholders to explain to them the reasons for the new charges and the types of services that the charges will support. In addition, some communities have provided advisory groups opportunities to help determine priorities for expenditures. Because of the potential for citizens opposed to charges in any particular community to affect outcomes, it is important that each jurisdiction craft more detailed strategies for implementation that provide additional opportunities for public participation.

Time Required for Implementation

Based on the experience of other jurisdictions, and because of the complexity of the tasks involved, it is likely that the process to implement stormwater could take between 18 months and two years to



implement stormwater rates for the first time. This fact means that local jurisdictions will have to fund the initial years of activities to comply with Phase II regulations from existing sources of revenues.

8.0 Conclusions

Previous sections have established that:

- Allen County, Leo-Cedarville, and Huntertown currently operate and maintain stormwater systems;
- Phase II stormwater regulations require new programs that will involve substantial costs;
- Each jurisdiction already operates programs that will count towards compliance but that new compliance costs will be incurred;
- Each jurisdiction presently relies on revenues from property taxes, fees for services such as plan review and site inspection, and specialized fees such as motor vehicle tax revenues;
- Municipalities in Indiana and elsewhere increasingly are establishing and using stormwater charges based on impervious surfaces to pay for stormwater controls; Leo-Cedarville adopted stormwater fees in late 2005;
- Participants in focus groups had varied opinions about how much local residents will be willing to pay. Some indicated between \$2.50 and \$3.50 per month would be generally acceptable. Others indicated that this might not be enough. As is typical in many communities, a minority of people will oppose any new charges;
- New or augmented stormwater charges could generate substantial revenues in Allen County, Leo-Cedarville, and Huntertown.
- Projected revenues in this report would be sufficient to pay for most of the costs of compliance with Phase II regulations in Allen County, Leo-Cedarville, and Huntertown, but probably would not be sufficient to pay for all current stormwater expenditures and new compliance costs;
- Each jurisdiction will need to rely on a variety of sources of revenues to fund all existing and new stormwater programs;
- Implementation of new systems of stormwater charges in Allen County and Huntertown will be a complex process that will involve many decisions by local legislative bodies and departmental administrators and may require more than two years to complete;
- Leo-Cedarville may need to augment their current stormwater rates to address the costs of Phase II activities; and



- The three jurisdictions probably will need to develop a cost-share agreement for funding a portion of the required Phase II activities.





Appendix A

Stormwater Expenditures by Jurisdiction









Appendix B

Focus Group/Interview Results





Appendix B: Focus Group/Interview Results

Focus Group Questions

- What stormwater rate will citizens be willing to pay?
- Is residents' willingness to pay affected by other cost recovery mechanisms such as regulated drain assessments and permit fees?
- What messages will resonate with citizens in educating them about the need for new expenditures?
- What institutional arrangements will be most accepted for managing this activity?
- What billing system will your community prefer?
- Are there particular activities that lend themselves to sharing?

Allen County/Huntertown Focus Group (July 12, 2005)

Participants:

Mike Yoder, Surveyor's Office

James DeArmond, Surveyor's Office

Bill Shinninger, Surveyor's Office

Larry Weber, Surveyor's Office

Allan Frisinger, Surveyor

Michelle Wood, Department of Planning Services

Jim Fortman, Huntertown Town Council

Comments:

- Only limited areas of the county are now subject to legal drain assessments.
- Huntertown utility rates are approximately \$21.00/mo. for water, \$25.00/mo. for sewer, and \$7.00/mo. for garbage pickup.
- There will be general skepticism about new fees.
- There will be competition for funds; concerns about priorities.
- Public won't necessarily make the distinction between quantity and quality.
- Likely to be a political football.
- Northern part of the county has new homes; residents more progressive.
- Any stormwater rate may be difficult for some farmers.
- Some thought that \$2.50 to \$3.50 per month would be reasonable.
- Others thought that level of funding would be insufficient.
- Clear plan might help to sell.
- The developers who are directly affected don't necessarily like these.
- Probably not a lot of support from the public.
- Residents will have expectations that go with new fees.



- In Hometown, people will want to see something physical for their money.
- Regulatory activities not a good sell.
- Dislike for mandates.
- Could talk about protecting the water and public health in Allen County, Indiana, and the U.S.
- Use radio and television to get messages about water quality out; Mike's Carwash has been a past supporter.
- Water quality message won't resonate; residents have a doomsday attitude.
- Important that everyone pays.
- Use existing whenever possible, current staff are overloaded.
- A system that addresses both quantity and quality would help to sell quality.
- Asked about whether the approach would be squeaky wheel system vs. systematic maintenance (such as the pavement management system).
- Benefit of collaboration is cost-savings.
- Education and mapping are appropriate activities for collaboration.

Leo-Cedarville Focus Group (July 12, 2005)

Participants:

Pat Proctor, Town Attorney
Lloyd W. Vollmuth, Stormwater Utility Board
Peggy Garton, Town Administrator and Stormwater Utility Board
Pam Spannuth, Clerk-Treasurer and Stormwater Utility Board
Tom Kurtz, Stormwater Utility Board
Jim Lauer, Town Engineer
Allan Frisinger, Allen County Surveyor

Comments:

- There was a negative backlash when the town started providing trash service. The cost was lower than people paid private haulers, but they were miffed by being mandated to use the town service.
- Some people will be "spitting mad."
- Stormwater rate will be perceived as a new tax.
- Community is very conservative and doesn't like change. Many residents moved away from Ft. Wayne because they didn't like the level of government intrusion.
- The town is going to take a hit with any fee so it might as well start high.
- Residents respond better if everyone has to pay.



- New projects may be built using a Barrett Law mechanism; older residents may be surprised that there are assessments. In the past, projects have been funded with grants and loans.
- The town issues building permits.
- Water quality may be a hard sell; you can see the quantity problems.
- Focus on quantity issues; maintenance of infrastructure and control of stormwater.
- Sell the improvements that will be made with the monies.
- Quality of life language may work.
- Selling the lake as an asset and using messages about cleaning it up.
- For residents who aren't experiencing quantity problems, quality issues may be a bigger sell.
- Avoid group meetings.
- Media ideas.
 - Local newspaper articles.
 - Full-page advertisements.
 - Newsletters.
 - *Journal Gazette*.
 - Posters and pamphlets.
 - Informational flyers.
 - Videos (some of these have been produced for more general use).
- Use success stories from other places; use information about fees in other places.
- Important to make clear that these are Leo-Cedarville problems vs. Fort Wayne problems.
- The town will have to have new staff.
- Stormwater utility has been formed; utility will create a new billing system.
- Town needs to collaborate with the county and Fort Wayne to reduce costs.
- The new stormwater utility is just finishing its budget for the next 18 months.
- Four areas in the town that need infrastructure improvements to address flooding.
- The billing system is being developed; billing will be done on a quarterly basis.
- Established a tiered interim system of rates; Umbaugh has assisted in this effort.
- Major maintenance problems; tiles often are located with roads.
- Town doesn't have a water or sewer utility. They are served by Pioneer Water and by a regional sewer district. Typical bills are \$26/mo for sewers and \$25 for water. Development in the



regional sewer district area is limited by the amount of sewage that Ft. Wayne will take.

- Stormwater problems across the county.





Appendix C

Stormwater Funding Mechanisms









Appendix D

Advantages and Disadvantages of Statutory Options





Table D1. Statutory powers and/or limitations.

Powers and/or limitations	Stormwater Districts IC 8-1.5-5-1, et seq.	Sanitary Sewage Districts IC 36-9-23-1, et seq.	Drainage Law IC 36-9-27, et seq.
Board	Requires establishment and appointment of separate Board (except for Indianapolis/Marion County).	Administered by existing municipal Utility Board or Board of Public Works.	Administered by County Drainage Board.
Territorial jurisdiction	May exercise powers only within corporate boundaries for cities and towns and only outside corporate boundaries for counties (except for Indianapolis/Marion County).	May exercise powers within ten miles of corporate boundaries.	Chapter applies generally to legal drains. If a private or legal drain also is drained by a legal drain, owners may be assessed for work on a legal drain. The newness of IC 36-9-27-114 makes exact application unclear.
User fees	Specific authority given; no procedural guidelines.	Specific authority given; detailed procedural guidelines.	Specific authority given; no specific procedural guidelines.
Property tax levy	District may impose special benefits tax on real estate within District.	No power to impose levy.	No power to impose levy, except in Lake County.
Eminent domain	Power to purchase or condemn property in name of the jurisdiction.	Power to purchase or condemn property; may only use sewage works revenues.	No specific authority given in this chapter.
Municipality or county subject to user charges	Municipalities and counties charged for reasonable cost and value of service.	Municipality subject to established fee and service charges.	Municipalities are subject to assessments for municipal property within a legal drain.
Liens/collection of fees	Special benefit taxes and fees create lien on real property.	Late payments subject to 10% penalty; attorney fees may be recovered. Fees assessed create lien on real property; must be recorded to enforce against subsequent owner.	Drainage assessments create lien on real property; no explicit authority given for newly defined stormwater fees
Credit for on-site stormwater storage	Clear statutory authority; one of many factors that a board may use in establishing fees.	Requirement for “just and equitable” user fees.	Clear statutory authority; one of many factors that a board may use in establishing fees.
Bonding capacity	Bonds payable from proceeds of special taxing district and revenues may not	District may issue bonds payable solely from revenue of the sewage works; no limit on	Drainage board may issue bonds for the cost of constructing or reconstructing in cases



Table D1. Statutory powers and/or limitations.

Powers and/or limitations	Stormwater Districts IC 8-1.5-5-1, et seq.	Sanitary Sewage Districts IC 36-9-23-1, et seq.	Drainage Law IC 36-9-27, et seq.
	exceed 8% of assessed valuation; Bonds not part of corporate indebtedness.	amount of issuance. Bonds not part of corporate indebtedness.	when project cost exceeds assessment proceeds expected for five years; no specific authority links this bonding ability to newly-defined stormwater fees.

Adapted from original source: Larry Wilson and Greg Lindsey. 1995. *Authority for Local Stormwater User Fees in Indiana*. Center for Urban Policy and the Environment: Indianapolis.





Appendix E

Methodology for Estimating Stormwater Charge Revenues (Approach 2)





Appendix E: Methodology for Estimating Stormwater Charge Revenues (Approach 2)

Section 6 provides a discussion of various proxy methods of estimating revenues from stormwater fees. In Approach 2, analysts used estimates of single family residential and employment-related land use in 2005 derived from assessment records to estimate potential revenues from stormwater charges.

Estimates for residential uses in each of the jurisdictions were used to establish an equivalent runoff unit (ERU) for the remainder of the analysis (see Table E1). Average total area per single family parcel was calculated by dividing the total area of single family residential land use in each jurisdiction by the number of parcels. Parcels were assigned to the MS4 areas in Allen County, Leo-Cedarville, and Hometown and for the remaining unincorporated area using standard GIS protocols. Total area per single family residential parcel was multiplied by both 25 and 40 percent impervious area. Based on professional experience, the average impervious surface used across Indiana was chosen for further use (2,800 square feet).

Estimates for employment-related uses then were used to establish how many ERUs were located in each jurisdiction (see Table E2). Total employment-related land use was multiplied by 50 percent to estimate total nonresidential impervious area. Total impervious area was divided by the ERU established previously (2,800 square feet) to establish the ERUs in each jurisdiction.

To estimate monthly revenue, owner-occupied units and employment-related ERUs were multiplied by three dollars and five dollars per month (see Table E3-E4). Annual revenues were calculated by multiplying monthly revenues by 12.

In January 2006, Fort Wayne annexed a large portion of Aboite Township including approximately 10,000 single family residences. This action decreased the Allen County MS4 area and diminishes the expected revenues from each of the three scenarios. To account for this change, 10,000 single family parcels were subtracted from the Allen County MS4 area in each of the three scenarios.

Table E1. Average impervious area for single family residential parcels.

Jurisdiction	Area single family residential (sq ft)(2005)	Single family residential parcels (2005)	Area per single family residence (sq ft)	ERU (25% impervious)	ERU (40% impervious)
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Allen County MS4 (unincorporated)*	1,074,018,825	26,474	40,569	10,142	16,228
Allen County non- MS4 (unincorporated)	1,169,486,001	11,256	103,899	25,975	41,560
Leo-Cedarville	27,431,381	1,115	24,602	6,151	9,841
Huntertown	25,293,306	848	29,827	7,457	11,931

*Residential square footage for the MS4 area is not adjusted for the recent annexation by Ft. Wayne.



Table E2. Employment-related equivalent runoff units (ERUs).

Jurisdiction	Employment-related land use (sq ft)	Impervious surface (50% Impervious)	ERUs (1ERU=2,800 sq ft impervious area)
Allen County MS4 (unincorporated)	320,677,564*	160,338,782	57,264
Allen County non- MS4 (unincorporated)	148,168,318	74,084,159	26,459
Leo-Cedarville	2,606,605	1,303,302	465
Huntertown	9,930,379	4,965,190	1,773

*No adjustment has been made to the employment-related square footage for the MS4 area because the area annexed by Ft. Wayne is predominantly residential.

Table E3. Stormwater revenue estimates for \$3.00 per ERU.

Jurisdiction	Single family parcels	Residential revenue (\$3.00 per month per unit)	Employment-related ERU	Nonresidential revenue (\$3.00 per ERU per month)	Total monthly revenue	Total annual revenue
Allen County MS4 (unincorporated)	16,474	\$49,422	57,264	171,792	\$221,214	\$2,654,563
Allen County non- MS4 (unincorporated)	11,256	\$33,768	26,459	79,376	\$113,144	\$1,357,727
Leo-Cedarville	1,115	\$3,345	465	1,396	\$4,741	\$56,897
Huntertown	848	\$2,544	1,773	5,320	\$7,864	\$94,366

Table E4. Stormwater revenue estimates for \$5.00 per ERU.

Jurisdiction	Owner-occupied Units	Residential revenue (\$5.00 per month per unit)	Employment-related ERU	Nonresidential revenue (\$5.00 per ERU per month)	Total monthly revenue	Total annual revenue
Allen County MS4 (unincorporated)	16,474	\$82,370	57,264	286,319	\$368,689	\$4,424,271
Allen County non- MS4 (unincorporated)	11,256	\$56,280	26,459	132,293	\$188,573	\$2,262,878
Leo-Cedarville	1,115	\$5,575	465	2,327	\$7,902	\$94,828
Huntertown	848	\$4,240	1,773	8,866	\$13,106	\$157,277

