



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|-----------------------|-----------|-------------------|----------|---------------|-------------|----------------|
| OML-05-0021 | 19T-002 | MHAB | AB38450 | 190813702 | 8/13/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Little Laughery Creek | | SR 229 | | 050902030502 | | 05090203060050 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4347089.79 | 651599.45 | 55 | 4.592 | 14.737 | 38 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|-------------------------------------|-------|-------------------------------------------------------------------------|---------------|
| 1084 (TURBELLARIA) | 1 | | 4 |
| 1396 (LUMBRICULIDAE) | 1 | or lumbricidae? | 5 |
| 1090 (Physa) | 3 | | 8 |
| 1210 (BIVALVIA) | 16 | VERY small | |
| 2156 (Corbicula fluminea) | 11 | | 6 |
| 2181 (Sphaerium) | 1 | | 6 |
| 9016 (Orconectes sloanii) | 1 | form II male | |
| 3019 (Maccaffertium exiguum) | 1 | see slide G19-049.2 | 2 |
| 1012 (BAETIDAE) | 2 | abdomens broken off/missing | 4 |
| 7011 (Acerpenna pygmaea) | 1 | | 2 |
| 3066 (Baetis intercalaris) | 20 | | 3 |
| 3071 (Baetis flavistriga) | 2 | | 3 |
| 3078 (Paracloeodes) | 1 | see slide G19-049.3 | |
| 9347 (Procloeon viridoculare) | 2 | | |
| 3183 (Caenis) | 5 | one missing abdomen, 4 small instars without dots | 3 |
| 9361 (Caenis dimunata grp.) | 41 | | |
| 3109 (Isonychia) | 1 | | 2 |
| 3230 (Aeshna umbrosa) | 1 | | |
| 3546 (Enallagma) | 2 | probably E. divagans- lateral gills missing or pigment poorly developed | 9 |
| 3560 (Enallagma basidens) | 1 | | |
| 7032 (Argia moesta) | 1 | | |
| 3572 (Argia tibialis) | 1 | or A. apicalis? | |
| 7118 (Trepobates inermis) | 1 | male | |
| 3600 (Peltodytes duodecimpunctatus) | 1 | | |
| 3684 (Laccophilus) | 1 | larva | 8 |
| 3851 (Berosus peregrinus) | 2 | | 6 |
| 7317 (Stenelmis sexlineata) | 16 | | |
| 7295 (Ancyronyx variegatus) | 2 | 1 larva + 1 adult | 4 |
| 1057 (HYDROPSYCHIDAE) | 4 | very small instars | 4 |
| 3432 (Cheumatopsyche) | 120 | one found dried/stuck to lid | 3 |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 47 | 5 |
| Total No. Individuals: | 345 | 5 |
| EPT Taxa: | 15 | 5 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 37.84 | 3 |
| % Non-insects excluding Astacidae: | 9.57 | 5 |
| Diptera Taxa: | 14 | 5 |
| % Intolerant (0-3): | 45.22 | 5 |
| % Tolerant (8-10): | 2.61 | 5 |
| % Predators FFG 1: | 6.09 | 1 |
| % Shredders + Scrapers FFG 1: | 2.61 | 1 |
| % Collector-Filterers FFG 1: | 41.74 | 1 |
| % Sprawlers: | 3.77 | 3 |
| mIBI Metric Score: | | 44 |

Supplemental Metrics

| | HBI | Score |
|----------------------|-------|-------|
| Shannon-Weaver Index | 3.76 | |
| Shannon Equitability | 2.67 | |
| % Dominant 3 Taxon | 0.69 | |
| % Chironomidae | 52.46 | |
| | 21.45 | |



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| TAXON | COUNT | NOTES | HBI Tolerance |
|--------------------------------------------------|-------|----------------------------------------------------------------------|---------------|
| | | outside of jar | |
| 3473 (Hydropsyche alvata) | 1 | | |
| 3000 (Hydroptila) | 2 | claws of larger specimen on slide G19-049.1, 2 different style cases | 3 |
| 8926 (Oecetis) | 1 | | 3 |
| 7452 (Tipula) | 1 | | 7 |
| 9370 (Ceratopogon grp.) | 3 | | 8 |
| 8083 (Chironomini (Tribe)) | 1 | | |
| 9261 (Thienemannimyia grp.) | 4 | | |
| 8074 (Thienemanniella) | 1 | | 4 |
| 8099 (Cryptochironomus) | 11 | | 5 |
| 8112 (Dicrotendipes) | 10 | | 6 |
| 8211 (Stictochironomus) | 3 | | 4 |
| 8228 (Cladotanytarsus) | 19 | | 4 |
| 8238 (Rheotanytarsus) | 2 | | 3 |
| 9093 (Stempellinella) | 1 | | 3 |
| 8241 (Tanytarsus) | 5 | | 4 |
| 9238 (Polypedilum (Uresipedilum) flavum) | 13 | | |
| 9241 (Polypedilum (Polypedilum) illinoense grp.) | 4 | | |

Residuals

| Identifier | Date | Count | %PSE |
|------------|------|-------|------|
|------------|------|-------|------|



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| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|-----------------------------|-----------|-------------------|----------|---------------|-------------|----------------|
| OML060-0005 | 19T-015 | MHAB | AB38453 | 190812601 | 8/12/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Tributary of Laughery Creek | | CR 1050 N | | 050902030505 | | 05090203060040 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4343486.8 | 648426.74 | 55 | 19.859 | 4.515 | 46 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|------------------------------------------------|-------|-------------------------|---------------|
| 1084 (TURBELLARIA) | 1 | | 4 |
| 1090 (Physa) | 3 | | 8 |
| 2211 (Pleurocera) | 2 | | |
| 1092 (SPHAERIIDAE) | 1 | | 8 |
| 1083 (ACARI) | 5 | | 4 |
| 9016 (Orconectes sloanii) | 2 | 1 Form 2 Male, 1 Female | |
| 3020 (Stenonema femoratum) | 4 | | 3 |
| 3365 (Proclaeon) | 2 | Slide R19-004.2 | |
| 9361 (Caenis diminuta grp.) | 1 | | |
| 3245 (Boyeria vinosa) | 2 | | 4 |
| 9351 (Phanogomphus) | 1 | | |
| 3534 (Calopteryx) | 3 | | 4 |
| 7026 (Calopteryx maculata) | 5 | | |
| 1041 (CORIXIDAE) | 2 | Immature | 5 |
| 7215 (Nepa apiculata) | 1 | nymph | |
| 7099 (Aquarius remigis) | 1 | 1 Male | |
| 7122 (Microvelia) | 4 | M. pulchella? | |
| 9290 (Gerridae (Gerrinae)) | 4 | | |
| 3600 (Peltodytes duodecimpunctatus) | 2 | 2 Adults | |
| 3960 (Helichus basalis) | 1 | 1 Adult Male | |
| 7293 (Psephenus herricki) | 3 | 3 Larvae | 4 |
| 7309 (Stenelmis crenata) | 2 | Slide R19-004.1; 1M, 1F | 5 |
| 7296 (Dubiraphia) | 1 | 1 Female Adult | 5 |
| 7295 (Ancyronyx variegatus) | 1 | Adult | 4 |
| 1054 (HYDROPTILIDAE) | 1 | | 4 |
| 7452 (Tipula) | 2 | | 7 |
| 7732 (Anopheles) | 5 | 3 Larvae 2 Pupae | |
| 7984 (Procladius) | 1 | | 7 |
| 8083 (Chironomini (Tribe)) | 5 | | |
| 8227 (Tanytarsini (Tribe)) | 1 | | |
| 9316 (Phaenopsectra obediens grp.) | 1 | | |
| 9248 (Ablabesmyia (Ablabesmyia) mallochi grp.) | 1 | | |
| 9261 (Thienemannimyia grp.) | 1 | | |
| 8086 (Chironomus) | 5 | | 8 |
| 8112 (Dicrotendipes) | 1 | | 6 |
| 9335 (Paratendipes albimanus grp) | 6 | | |
| 8228 (Cladotanytarsus) | 1 | | 4 |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 41 | 5 |
| Total No. Individuals: | 95 | 1 |
| EPT Taxa: | 4 | 5 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 24.24 | 3 |
| % Non-insects excluding Astacidae: | 12.63 | 5 |
| Diptera Taxa: | 16 | 5 |
| % Intolerant (0-3): | 4.21 | 1 |
| % Tolerant (8-10): | 9.47 | 5 |
| % Predators FFG 1: | 18.95 | 3 |
| % Shredders + Scrapers FFG 1: | 11.58 | 3 |
| % Collector-Filterers FFG 1: | 12.63 | 3 |
| % Sprawlers: | 1.05 | 1 |
| mIBI Metric Score: | | 40 |

Supplemental Metrics

| | HBI | Value |
|----------------------|-----|-------|
| | HBI | 5.07 |
| Shannon-Weaver Index | | 3.5 |
| Shannon Equitability | | 0.94 |
| % Dominant 3 Taxon | | 16.84 |
| % Chironomidae | | 34.74 |



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| TAXON | COUNT | NOTES | HBI Tolerance |
|----------------------------------------------------------|-------|------------------|------------------|
| 8235 (Paratanytarsus) | 1 | | 4 |
| 8241 (Tanytarsus) | 5 | 1 Pupae 4 Larvae | 4 |
| 9277 (Polypedilum (Tripodura) scalaenum grp) | 3 | | |
| 9278 (Polypedilum (Tripodura) halterale-simulans grp) | 1 | | |

Residuals

| Identifier | Date | Count | %PSE |
|------------|------------|-------|-------|
| RAC | 10/29/2019 | 2 | 97.89 |



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| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|----------------------------|-----------|-------------------|----------|---------------|----------------|----------|
| OML-05-0035 | 19T-022 | MHAB | AB38438 | 190812801 | 8/12/19 | Franklin |
| Stream Name | | Location | | HUC 12 | HUOTO14 | |
| Trib of Little Laughery Cr | | Huntersville Rd | | 050902030502 | 05090203060050 | |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4352360.77 | 652195.67 | 55 | 15.1 | 3.482 | 47 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|---------------------------------------------------------|-------|-----------------|---------------|
| 1084 (TURBELLARIA) | 5 | | 4 |
| 1552 (Tubificidae with bifid chetae and no hair chetae) | 1 | | |
| 1357 (BRANCHIOBELLELLIDAE) | 4 | | 6 |
| 2181 (Sphaerium) | 1 | | 6 |
| 8996 (Orconectes) | 3 | females | 4 |
| 9016 (Orconectes sloanii) | 2 | males | |
| 1251 (ISOTOMIDAE) | 1 | | |
| 9361 (Caenis diminuta grp.) | 31 | | |
| 7027 (Hetaerina americana) | 1 | | |
| 3542 (Ischnura posita) | 2 | | |
| 3546 (Enallagma) | 18 | | 9 |
| 7117 (Trepobates) | 1 | nymph | |
| 7118 (Trepobates inermis) | 1 | 1 female | |
| 3846 (Berosus) | 1 | larva | 7 |
| 3872 (Tropisternus) | 1 | | |
| 7296 (Dubiraphia) | 1 | abdomen missing | 5 |
| 8083 (Chironomini (Tribe)) | 1 | | |
| 8112 (Dicrotendipes) | 3 | | 6 |
| 9335 (Paratendipes albimanus grp) | 2 | | |
| 8211 (Stictochironomus) | 12 | | 4 |
| 8241 (Tanytarsus) | 1 | | 4 |
| 9277 (Polypedilum (Tripodura) scalaenum grp) | 2 | | |
| 9278 (Polypedilum (Tripodura) halterale-simulans grp) | 2 | | |
| 9238 (Polypedilum (Uresipedilum) flavum) | 2 | | |
| 9344 (Cricotopus (Cricotopus) bicinctus) | 1 | | |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 25 | 3 |
| Total No. Individuals: | 100 | 1 |
| EPT Taxa: | 1 | 1 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 7.69 | 5 |
| % Non-insects excluding Astacidae: | 11 | 5 |
| Diptera Taxa: | 9 | 3 |
| % Intolerant (0-3): | 0 | 1 |
| % Tolerant (8-10): | 18 | 3 |
| % Predators FFG 1: | 23 | 3 |
| % Shredders + Scrapers FFG 1: | 0 | 1 |
| % Collector-Filterers FFG 1: | 2 | 5 |
| % Sprawlers: | 0 | 1 |
| mIBI Metric Score: | | 32 |

Supplemental Metrics

| | HBI | |
|----------------------|------|------|
| | 6.24 | |
| Shannon-Weaver Index | | 2.44 |
| Shannon Equitability | | 0.76 |
| % Dominant 3 Taxon | | 61 |
| % Chironomidae | | 26 |

Residuals

| Identifier | Date | Count | %PSE |
|------------|-----------|-------|------|
| MSG | 9/24/2019 | 3 | 97 |



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| | | | | | | |
|--------------------|----------------|--------------------------|-----------------|----------------------|--------------------|----------------|
| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
| OML-05-0025 | 19T-007 | MHAB | AB38447 | 190812704 | 8/12/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Ripley Cr | | SR 48 | | 050902030503 | | 05090203060070 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4341402.3 | 660164.07 | 55 | 12.09 | 7.28 | 44 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|---------------------------------------------------------|-------|-------------------------------|---------------|
| 1396 (LUMBRICULIDAE) | 1 | | 5 |
| 1552 (Tubificidae with bifid chetae and no hair chetae) | 3 | | |
| 1090 (Physa) | 2 | | 8 |
| 1083 (ACARI) | 1 | | 4 |
| 9050 (Hyaella) | 2 | | |
| 9373 (Neocloeon) | 1 | | 3 |
| 9361 (Caenis diminuta grp.) | 2 | | |
| 3248 (Basiaeschna janata) | 2 | | 6 |
| 7026 (Calopteryx maculata) | 1 | | |
| 1026 (COENAGRIONIDAE) | 2 | imm. | 9 |
| 3568 (Argia) | 1 | | 5 |
| 1038 (GERRIDAE) | 7 | imm. | |
| 7121 (Trepobates subnitidus) | 1 | | |
| 1096 (SCIRTIDAE) | 4 | 4L | 5 |
| 7300 (Dubiraphia vittata) | 3 | 1M,2F; PL=255um, P19-001.1 | |
| 9370 (Ceratopogon grp.) | 1 | | 8 |
| 1073 (CHIRONOMIDAE(all other)) | 1 | | 6 |
| 7984 (Procladius) | 4 | | 7 |
| 7926 (Tanypodinae (Subfamily)) | 1 | | |
| 8083 (Chironomini (Tribe)) | 7 | 1P | |
| 8227 (Tanytarsini (Tribe)) | 1 | | |
| 9248 (Ablabesmyia (Ablabesmyia) mallochi grp.) | 1 | | |
| 8086 (Chironomus) | 6 | | 8 |
| 8099 (Cryptochironomus) | 5 | | 5 |
| 8112 (Dicrotendipes) | 4 | | 6 |
| 8123 (Endochironomus) | 3 | | 6 |
| 8228 (Cladotanytarsus) | 4 | | 4 |
| 8235 (Paratanytarsus) | 3 | | 4 |
| 9093 (Stempellinella) | 1 | | 3 |
| 8241 (Tanytarsus) | 3 | | 4 |
| 9278 (Polypedilum (Tripodura) halterale-simulans grp) | 1 | | |
| 9241 (Polypedilum (Polypedilum) illinoense grp.) | 35 | | |
| 8320 (Chrysops) | 2 | | 5 |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 33 | 3 |
| Total No. Individuals: | 116 | 1 |
| EPT Taxa: | 2 | 1 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 15 | 5 |
| % Non-insects excluding Astacidae: | 7.76 | 5 |
| Diptera Taxa: | 18 | 5 |
| % Intolerant (0-3): | 1.72 | 1 |
| % Tolerant (8-10): | 9.48 | 5 |
| % Predators FFG 1: | 19.83 | 3 |
| % Shredders + Scrapers FFG 1: | 7.76 | 1 |
| % Collector-Filterers FFG 1: | 4.31 | 5 |
| % Sprawlers: | 8.62 | 5 |
| mIBI Metric Score: | | 40 |

Supplemental Metrics

| | HBI |
|----------------------|-------|
| Shannon-Weaver Index | 5.75 |
| Shannon Equitability | 2.88 |
| % Dominant 3 Taxon | 0.82 |
| % Chironomidae | 42.24 |
| | 68.97 |

Residuals



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| Identifier | Date | Count | %PSE |
|------------|----------|-------|-------|
| PDM | 1/7/2020 | 3 | 97.41 |



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| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|-----------------------|-----------|-------------------|----------|---------------|-------------|----------------|
| OML-05-0020 | 19T-001 | MHAB | AB38451 | 190812701 | 8/12/19 | Franklin |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Little Laughery Creek | | SR 46 | | 050902030502 | | 05090203060050 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4352497.95 | 651792.31 | 55 | 5.349 | 5.2 | 32 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|------------------------------------------------|-------|---------------------|---------------|
| 1433 (Limnodrilus cervix) | 1 | PL=900 um | 10 |
| 1357 (BRANCHIOBELLELLIDAE) | 1 | | 6 |
| 1090 (Physa) | 3 | | 8 |
| 2181 (Sphaerium) | 6 | | 6 |
| 8996 (Orconectes) | 1 | form II male | 4 |
| 3020 (Stenonema femoratum) | 3 | | 3 |
| 9361 (Caenis dimunata grp.) | 3 | | |
| 3546 (Enallagma) | 1 | no gills | 9 |
| 3549 (Enallagma divagans) | 3 | | |
| 7111 (Rheumatobates) | 2 | nymphs | |
| 7117 (Trepobates) | 1 | nymph | |
| 7118 (Trepobates inermis) | 3 | 2 males + 1 female | |
| 7296 (Dubiraphia) | 4 | 3 larvae + 1 female | 5 |
| 9370 (Ceratopogon grp.) | 1 | | 8 |
| 1073 (CHIRONOMIDAE(all other)) | 6 | | 6 |
| 7984 (Procladius) | 12 | | 7 |
| 9153 (Tribelos) | 1 | | 5 |
| 7926 (Tanypodinae (Subfamily)) | 2 | | |
| 8082 (Chironominae (Subfamily)) | 1 | | |
| 8083 (Chironomini (Tribe)) | 6 | | |
| 8227 (Tanytarsini (Tribe)) | 2 | | |
| 9248 (Ablabesmyia (Ablabesmyia) mallochi grp.) | 3 | | |
| 9261 (Thienemannimyia grp.) | 1 | | |
| 8017 (Corynoneura) | 5 | | 4 |
| 9284 (Tribelos jucundus) | 1 | | |
| 8074 (Thienemanniella) | 1 | | 4 |
| 8086 (Chironomus) | 4 | | 8 |
| 8099 (Cryptochironomus) | 7 | | 5 |
| 8112 (Dicrotendipes) | 15 | | 6 |
| 9335 (Paratendipes albimanus grp) | 1 | | |
| 8172 (Phaenopsectra) | 1 | | 7 |
| 9165 (Saetheria tylus) | 2 | | 4 |
| 8211 (Stictochironomus) | 3 | | 4 |
| 8228 (Cladotanytarsus) | 9 | | 4 |
| 8235 (Paratanytarsus) | 3 | | 4 |
| 8238 (Rheotanytarsus) | 1 | | 3 |
| 9093 (Stempellinella) | 1 | | 3 |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 43 | 5 |
| Total No. Individuals: | 146 | 3 |
| EPT Taxa: | 2 | 1 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 23.01 | 5 |
| % Non-insects excluding Astacidae: | 7.53 | 5 |
| Diptera Taxa: | 30 | 5 |
| % Intolerant (0-3): | 3.42 | 1 |
| % Tolerant (8-10): | 6.85 | 5 |
| % Predators FFG 1: | 19.86 | 3 |
| % Shredders + Scrapers FFG 1: | 2.74 | 1 |
| % Collector-Filterers FFG 1: | 13.01 | 3 |
| % Sprawlers: | 17.81 | 5 |
| mIBI Metric Score: | | 42 |

Supplemental Metrics

| | HBI | |
|----------------------|-----|-------|
| | HBI | 5.51 |
| Shannon-Weaver Index | | 3.42 |
| Shannon Equitability | | 0.91 |
| % Dominant 3 Taxon | | 25.34 |
| % Chironomidae | | 77.4 |



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| TAXON | COUNT | NOTES | HBI Tolerance |
|----------------------------------------------------------|-------|-------|------------------|
| 8241 (Tanytarsus) | 4 | | 4 |
| 9235 (Polypedilum (Tripodura)) | 1 | | |
| 9277 (Polypedilum (Tripodura) scalaenum grp) | 3 | | |
| 9278 (Polypedilum (Tripodura) halterale-simulans grp) | 10 | | |
| 9238 (Polypedilum (Uresipedilum) flavum) | 2 | | |
| 9241 (Polypedilum (Polypedilum) illinoense grp.) | 5 | | |

Residuals

| Identifier | Date | Count | %PSE |
|------------|-----------|-------|-------|
| MSG | 9/24/2019 | 3 | 97.92 |



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| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|-------------|---------|-------------------|----------|---------------|-------------|--------|
| OML-05-0040 | 19T-027 | MHAB | AB38429 | 190812703 | 8/12/19 | Ripley |

| Stream Name | Location | HUC 12 | HUCTO14 |
|-------------------|-------------|--------------|----------------|
| Trib of Ripley Cr | N Spades Rd | 050902030503 | 05090203060070 |

| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score |
|------------|-----------|-----------|----------|---------------|------------|
| 4340983.85 | 661285.49 | 55 | 13.963 | 3.944 | 49 |

| TAXON | COUNT | NOTES | HBI Tolerance |
|---------------------------------------------------------|-------|----------------------------------------------------------|---------------|
| 1515 (Pristina aequisetata) | 1 | | 8 |
| 1561 (Nais communis/variabilis complex) | 1 | | |
| 1552 (Tubificidae with bifid chetae and no hair chetae) | 1 | | |
| 1555 (Tubificidae with bifid chetae and hair) | 3 | | |
| 1083 (ACARI) | 1 | | 4 |
| 9031 (Lirceus) | 5 | | 8 |
| 9056 (Crangonyx) | 1 | | 6 |
| 9016 (Orconectes sloanii) | 1 | M Form II | |
| 1251 (ISOTOMIDAE) | 1 | | |
| 3020 (Stenonema femoratum) | 1 | | 3 |
| 1012 (BAETIDAE) | 4 | | 4 |
| 9365 (Baetis flavistriga complex) | 27 | Slides S19-032.2, S19-032.3, and S19-032.4 | 3 |
| 9366 (Baetis intercalaris complex) | 13 | Slides S19-032.5 and S19-032.6 | 3 |
| 3190 (Baetisca) | 1 | small instar | 4 |
| 3245 (Boyeria vinosa) | 2 | | 4 |
| 1021 (GOMPHIDAE) | 2 | | 1 |
| 3116 (Progomphus obscurus) | 2 | | |
| 3099 (Hagenius brevistylus) | 1 | | 1 |
| 9351 (Phanogomphus) | 2 | | |
| 1022 (CALOPTERYGIDAE) | 4 | early instars; likely Calopteryx | 5 |
| 7026 (Calopteryx maculata) | 17 | | |
| 1026 (COENAGRIONIDAE) | 1 | small instar | 9 |
| 3568 (Argia) | 1 | | 5 |
| 7122 (Microvelia) | 1 | nymph | |
| 7123 (Microvelia americana) | 1 | adult; 1M | |
| 7296 (Dubiraphia) | 2 | 2L | 5 |
| 7300 (Dubiraphia vittata) | 6 | Slide S19-032.1 (penis length = 245 µm); 3M, 3F (adults) | |
| 7321 (Macronychus glabratus) | 7 | adults | 3 |
| 3432 (Cheumatopsyche) | 49 | | 3 |
| 7610 (Hexatoma) | 1 | | 2 |
| 7723 (Dixella) | 2 | | |
| 7732 (Anopheles) | 3 | | |
| 7814 (Simulium) | 3 | | 5 |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 65 | 5 |
| Total No. Individuals: | 526 | 5 |
| EPT Taxa: | 6 | 5 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 63.66 | 1 |
| % Non-insects excluding Astacidae: | 2.47 | 5 |
| Diptera Taxa: | 36 | 5 |
| % Intolerant (0-3): | 24.71 | 3 |
| % Tolerant (8-10): | 1.52 | 5 |
| % Predators FFG 1: | 8.94 | 1 |
| % Shredders + Scrapers FFG 1: | 0.57 | 1 |
| % Collector-Filterers FFG 1: | 36.12 | 1 |
| % Sprawlers: | 8.75 | 5 |
| mIBI Metric Score: | | 42 |

Supplemental Metrics

| | HBI | Score |
|----------------------|-------|-------|
| Shannon-Weaver Index | 3.84 | |
| Shannon Equitability | 3.13 | |
| % Dominant 3 Taxon | 0.75 | |
| % Chironomidae | 42.02 | |
| | 63.31 | |



**OWQ/WAPB Macroinvertebrate Community Assessment
MHAB Report**

| TAXON | COUNT | NOTES | HBI Tolerance |
|-----------------------------------------------------------|-------|---------------------------------------------------------|------------------|
| 9370 (Ceratopogon grp.) | 1 | | 8 |
| 1073 (CHIRONOMIDAE(all other)) | 5 | Larvae: 2; Pupae: 3 | 6 |
| 7964 (Labrundinia pilosella) | 4 | | 3 |
| 7984 (Procladius) | 5 | | 7 |
| 7926 (Tanypodinae (Subfamily)) | 4 | | |
| 8083 (Chironomini (Tribe)) | 5 | | |
| 8227 (Tanytarsini (Tribe)) | 3 | Larvae: 2; Pupa: 1 | |
| 9248 (Ablabesmyia (Ablabesmyia) mallochi grp.) | 6 | | |
| 9261 (Thienemannimyia grp.) | 33 | Slide Mounted Specimens: Slides S19-033 through S19-070 | |
| 8006 (Orthoclaadiinae (Subfamily)) | 1 | pupa | |
| 8017 (Corynoneura) | 1 | | 4 |
| 9339 (Rheosmittia) | 5 | | |
| 8074 (Thienemanniella) | 3 | | 4 |
| 8099 (Cryptochironomus) | 4 | | 5 |
| 8112 (Dicrotendipes) | 2 | | 6 |
| 8154 (Microtendipes pedellus) | 1 | | |
| 8163 (Paracladopelma loganae) | 3 | | |
| 9335 (Paratendipes albimanus grp) | 2 | | |
| 8177 (Phaenopsectra punctipes) | 1 | | 4 |
| 8179 (Polypedilum) | 2 | | |
| 9165 (Saetheria tylus) | 27 | Larvae: 25; Pupae: 2 | 4 |
| 8228 (Cladotanytarsus) | 62 | | 4 |
| 8235 (Paratanytarsus) | 1 | | 4 |
| 8238 (Rheotanytarsus) | 16 | larvae: 15; pupa: 1 | 3 |
| 9093 (Stempellinella) | 9 | | 3 |
| 8241 (Tanytarsus) | 110 | Larvae: 109; Pupa: 1 | 4 |
| 9260 (Cricotopus (Cricotopus) /Orthocladus (Orthocladus)) | 1 | | |
| 9277 (Polypedilum (Tripodura) scalaenum grp) | 12 | | |
| 9278 (Polypedilum (Tripodura) halterale-simulans grp) | 2 | | |
| 9238 (Polypedilum (Uresipedilum) flavum) | 2 | | |
| 9241 (Polypedilum (Polypedilum) illinoense grp.) | 1 | | |
| 8397 (Hemerodromia) | 24 | | |

Residuals

| Identifier | Date | Count | %PSE |
|------------|-----------|-------|-------|
| SEZ | 10/2/2019 | 9 | 98.29 |



OWQ/WAPB Macroinvertebrate Community Assessment
MHAB Report



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|-------------|----------|-------------------|----------|---------------|-------------|----------------|
| OML-05-0026 | 19T-008 | MHAB | AB38433 | 190812604 | 8/12/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Ripley Cr | | N Old Milan Rd | | 050902030503 | | 05090203060070 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4337770.66 | 658075.1 | 55 | 4.553 | 18.703 | 44 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|-----------------------------------------|-------|---------------------------------------------------------------------|---------------|
| 1498 (Nais) | 1 | | 8 |
| 1561 (Nais communis/variabilis complex) | 1 | | |
| 1083 (ACARI) | 1 | | 4 |
| 9050 (Hyaella) | 5 | | |
| 8996 (Orconectes) | 2 | 2 Female | 4 |
| 1251 (ISOTOMIDAE) | 1 | | |
| 3020 (Stenonema femoratum) | 1 | | 3 |
| 3049 (Stenacron interpunctatum) | 1 | Slide R-19-023.2 | 7 |
| 3372 (Procloeon rubropictum) | 1 | Slide R19-023.3 | |
| 9347 (Procloeon viridoculare) | 1 | Slide R19-023.4 | |
| 3183 (Caenis) | 3 | | 3 |
| 3188 (Caenis latipennis) | 7 | Slide R19-023.5 & Slide R19-023.6 | |
| 3248 (Basiaeschna janata) | 1 | | 6 |
| 3099 (Hagenius brevistylus) | 1 | | 1 |
| 7026 (Calopteryx maculata) | 1 | | |
| 3549 (Enallagma divagans) | 2 | | |
| 3572 (Argia tibialis) | 4 | | |
| 7118 (Trepobates inermis) | 2 | 2 Male | |
| 7132 (Rhagovelia oriander) | 1 | | |
| 7122 (Microvelia) | 2 | | |
| 7129 (Microvelia pulchella) | 2 | 2 Female | |
| 3598 (Peltodytes) | 4 | 2 Larvae 2 Adult - appear to be P. sexmaculata, but ID inconclusive | 7 |
| 3600 (Peltodytes duodecimpunctatus) | 5 | Adult | |
| 3601 (Peltodytes lengi) | 2 | Adult | |
| 3603 (Peltodytes pedunculatus) | 1 | Adult | |
| 3776 (Uvarus) | 3 | Adult; U. lacustris? | |
| 3863 (Paracymus) | 2 | Adult | |
| 3960 (Helichus basalis) | 1 | Adult | |
| 7317 (Stenelmis sexlineata) | 7 | Adult 2 Male 5 Female | |
| 7300 (Dubiraphia vittata) | 1 | Adult Male Slide R19-023.1 | |
| 7295 (Ancyronyx variegatus) | 15 | Adult | 4 |
| 7321 (Macronychus glabratus) | 4 | Adult | 3 |
| 7732 (Anopheles) | 1 | | |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 50 | 5 |
| Total No. Individuals: | 152 | 3 |
| EPT Taxa: | 6 | 3 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 56.25 | 1 |
| % Non-insects excluding Astacidae: | 5.26 | 5 |
| Diptera Taxa: | 18 | 5 |
| % Intolerant (0-3): | 5.92 | 1 |
| % Tolerant (8-10): | 3.29 | 5 |
| % Predators FFG 1: | 13.16 | 1 |
| % Shredders + Scrapers FFG 1: | 3.29 | 1 |
| % Collector-Filterers FFG 1: | 17.11 | 3 |
| % Sprawlers: | 4.61 | 3 |
| mIBI Metric Score: | | 36 |

Supplemental Metrics

| | HBI |
|----------------------|-------|
| | 4.59 |
| Shannon-Weaver Index | 3.39 |
| Shannon Equitability | 0.87 |
| % Dominant 3 Taxon | 32.89 |
| % Chironomidae | 42.11 |



OWQ/WAPB Macroinvertebrate Community Assessment
MHAB Report

| TAXON | COUNT | NOTES | HBI Tolerance |
|----------------------------------------------------------|-------|-------|------------------|
| 7965 (Larsia) | 2 | | 4 |
| 7984 (Procladius) | 3 | | 7 |
| 8083 (Chironomini (Tribe)) | 1 | | |
| 9248 (Ablabesmyia (Ablabesmyia) mallochi grp.) | 3 | | |
| 9250 (Ablabesmyia (Ablabesmyia) rhamphae grp.) | 1 | | |
| 8086 (Chironomus) | 4 | | 8 |
| 8099 (Cryptochironomus) | 1 | | 5 |
| 8112 (Dicrotendipes) | 7 | | 6 |
| 8126 (Glyptotendipes) | 1 | | 6 |
| 8157 (Parachironomus) | 1 | | 4 |
| 8179 (Polypedilum) | 1 | | |
| 8228 (Cladotanytarsus) | 11 | | 4 |
| 8235 (Paratanytarsus) | 1 | | 4 |
| 8241 (Tanytarsus) | 24 | | 4 |
| 9278 (Polypedilum (Tripodura) halterale-simulans grp) | 1 | | |
| 9241 (Polypedilum (Polypedilum) illinoense grp.) | 2 | | |
| 8320 (Chrysops) | 1 | | 5 |

Residuals

| Identifier | Date | Count | %PSE |
|------------|------|-------|------|
|------------|------|-------|------|



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|----------------|-----------|-------------------|----------|---------------|-------------|----------------|
| OML060-0006 | 19T-017 | MHAB | AB38454 | 190812805 | 8/12/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Laughery Creek | | CR 200 W | | 050902030505 | | 05090203060030 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4345442.76 | 647447.98 | 55 | 4.427 | 30.815 | 53 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|---------------------------------------------------------|-------|------------------------------------------------------------------------|---------------|
| 1498 (Nais) | 1 | | 8 |
| 1552 (Tubificidae with bifid chetae and no hair chetae) | 1 | | |
| 1357 (BRANCHIOBDELLIDAE) | 7 | | 6 |
| 1206 (PLANORBIDAE) | 9 | small; 1 ind. very small, was likely crushed when placing in vial. | 6 |
| 2211 (Pleurocera) | 3 | | |
| 2156 (Corbicula fluminea) | 3 | | 6 |
| 1092 (SPHAERIIDAE) | 1 | | 8 |
| 1083 (ACARI) | 3 | | 4 |
| 9031 (Lirceus) | 1 | | 8 |
| 9056 (Crangonyx) | 2 | | 6 |
| 8996 (Orconectes) | 9 | 8F; 1M Form II | 4 |
| 9008 (Orconectes rusticus) | 1 | M Form II | 6 |
| 9016 (Orconectes sloanii) | 3 | 3M Form II | |
| 3049 (Stenacron interpunctatum) | 2 | Slide S19-004.1 | 7 |
| 3183 (Caenis) | 2 | small instars; likely C. diminuta grp. | 3 |
| 9361 (Caenis dimunata grp.) | 12 | | |
| 3245 (Boyeria vinosa) | 3 | | 4 |
| 3248 (Basiaeschna janata) | 2 | | 6 |
| 3099 (Hagenius brevistylus) | 1 | | 1 |
| 7046 (Epiteca princeps) | 1 | | |
| 7026 (Calopteryx maculata) | 2 | | |
| 1026 (COENAGRIONIDAE) | 1 | early instar missing labium | 9 |
| 3546 (Enallagma) | 75 | 25 no gills; early instars | 9 |
| 3549 (Enallagma divagans) | 27 | | |
| 3560 (Enallagma basidens) | 2 | | |
| 3568 (Argia) | 5 | ind. in small vial w/ labium that fell off; 3 no gills; 1 early instar | 5 |
| 9095 (Argia fumipennis) | 1 | | |
| 7132 (Rhagovelia oriander) | 1 | 1M | |
| 7122 (Microvelia) | 2 | nymphs | |
| 7123 (Microvelia americana) | 1 | | |
| 3600 (Peltodytes duodecimpunctatus) | 6 | Adults | |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 59 | 5 |
| Total No. Individuals: | 305 | 5 |
| EPT Taxa: | 6 | 3 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 46 | 3 |
| % Non-insects excluding Astacidae: | 10.82 | 5 |
| Diptera Taxa: | 22 | 5 |
| % Intolerant (0-3): | 5.57 | 1 |
| % Tolerant (8-10): | 25.9 | 1 |
| % Predators FFG 1: | 41.64 | 5 |
| % Shredders + Scrapers FFG 1: | 4.59 | 1 |
| % Collector-Filterers FFG 1: | 12.46 | 3 |
| % Sprawlers: | 3.61 | 3 |
| mIBI Metric Score: | | 40 |

Supplemental Metrics

| | HBI | Value |
|----------------------|-------|-------|
| Shannon-Weaver Index | 6.27 | |
| Shannon Equitability | 3.25 | |
| % Dominant 3 Taxon | 0.8 | |
| % Chironomidae | 41.64 | |
| | 32.79 | |



**OWQ/WAPB Macroinvertebrate Community Assessment
MHAB Report**

| TAXON | COUNT | NOTES | HBI Tolerance |
|----------------------------------------------------------------------------------|-------|------------------------------------------------------------------|------------------|
| 3851 (<i>Berosus peregrinus</i>) | 3 | adults | 6 |
| 7296 (<i>Dubiraphia</i>) | 2 | 2A females | 5 |
| 1045 (PHILOPOTAMIDAE) | 3 | early instars | 3 |
| 3432 (<i>Cheumatopsyche</i>) | 4 | | 3 |
| 8952 (<i>Helicopsyche borealis</i>) | 1 | | 3 |
| 7964 (<i>Labrundinia pilosella</i>) | 1 | | 3 |
| 7984 (<i>Procladius</i>) | 1 | | 7 |
| 8083 (Chironomini (Tribe)) | 4 | | |
| 9248 (<i>Ablabesmyia</i> (<i>Ablabesmyia</i>) <i>mallochi</i> grp.) | 3 | | |
| 9250 (<i>Ablabesmyia</i> (<i>Ablabesmyia</i>) <i>rhamphae</i> grp.) | 1 | | |
| 9261 (<i>Thienemannimyia</i> grp.) | 4 | | |
| 8017 (<i>Corynoneura</i>) | 1 | | 4 |
| 9284 (<i>Tribelos jucundus</i>) | 8 | Slide Mounted Specimens: Slides S19-005 through S19-016 | |
| 8074 (<i>Thienemanniella</i>) | 1 | | 4 |
| 8099 (<i>Cryptochironomus</i>) | 4 | | 5 |
| 8112 (<i>Dicrotendipes</i>) | 13 | | 6 |
| 9335 (<i>Paratendipes albimanus</i> grp) | 1 | | |
| 8172 (<i>Phaenopsectra</i>) | 1 | | 7 |
| 8211 (<i>Stictochironomus</i>) | 3 | | 4 |
| 8228 (<i>Cladotanytarsus</i>) | 7 | | 4 |
| 8235 (<i>Paratanytarsus</i>) | 7 | Larvae: 6; Pupa: 1 | 4 |
| 8238 (<i>Rheotanytarsus</i>) | 2 | | 3 |
| 9093 (<i>Stempellinella</i>) | 3 | | 3 |
| 8241 (<i>Tanytarsus</i>) | 25 | Larvae: 23; Pupae: 2 | 4 |
| 9278 (<i>Polypedilum</i> (<i>Tripodura</i>) <i>halterale-simulans</i> grp) | 2 | | |
| 9238 (<i>Polypedilum</i> (<i>Uresipedilum</i>) <i>flavum</i>) | 2 | | |
| 9241 (<i>Polypedilum</i> (<i>Polypedilum</i>) <i>illinoense</i> grp.) | 6 | | |
| 18006 (<i>Urnatella gracilis</i>) | 2 | | |

Residuals

| Identifier | Date | Count | %PSE |
|------------|-----------|-------|-------|
| SEZ | 9/19/2019 | 14 | 95.41 |



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|-------------|-----------|-------------------|----------|---------------|-------------|----------------|
| OML-05-0032 | 19T-016 | MHAB | AB38442 | 190812806 | 8/12/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Walnut Fork | | CR 1300 N | | 050902030505 | | 05090203060030 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4347574.15 | 648381.34 | 55 | 11.455 | 3.98 | 32 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|---------------------------------------------------------|-------|----------------------------------------|---------------|
| 1552 (Tubificidae with bifid chetae and no hair chetae) | 1 | | |
| 1234 (GLOSSIPHONIIDAE) | 2 | | |
| 1233 (ERPOBDELLIDAE) | 1 | | |
| 3183 (Caenis) | 1 | without triad of dots, small instar | 3 |
| 9361 (Caenis dimunata grp.) | 4 | all with triad of dots | |
| 1021 (GOMPHIDAE) | 1 | small instar | 1 |
| 7026 (Calopteryx maculata) | 2 | | |
| 3546 (Enallagma) | 5 | | 9 |
| 3560 (Enallagma basidens) | 1 | | |
| 7111 (Rheumatobates) | 4 | females + nymphs? possibly R. minutus? | |
| 7113 (Rheumatobates rileyi) | 1 | male | |
| 7117 (Trepobates) | 3 | | |
| 7296 (Dubiraphia) | 1 | female | 5 |
| 8926 (Oecetis) | 1 | Species A? | 3 |
| 7984 (Procladius) | 6 | | 7 |
| 8083 (Chironomini (Tribe)) | 4 | | |
| 9261 (Thienemannimyia grp.) | 1 | | |
| 9284 (Tribelos jucundus) | 5 | | |
| 8086 (Chironomus) | 3 | | 8 |
| 8112 (Dicrotendipes) | 2 | | 6 |
| 9335 (Paratendipes albimanus grp) | 1 | | |
| 8211 (Stictochironomus) | 8 | | 4 |
| 8228 (Cladotanytarsus) | 1 | | 4 |
| 8235 (Paratanytarsus) | 1 | | 4 |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 24 | 3 |
| Total No. Individuals: | 60 | 1 |
| EPT Taxa: | 3 | 3 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 6.25 | 5 |
| % Non-insects excluding Astacidae: | 6.67 | 5 |
| Diptera Taxa: | 10 | 3 |
| % Intolerant (0-3): | 5 | 1 |
| % Tolerant (8-10): | 13.33 | 3 |
| % Predators FFG 1: | 41.67 | 5 |
| % Shredders + Scrapers FFG 1: | 0 | 1 |
| % Collector-Filterers FFG 1: | 0 | 5 |
| % Sprawlers: | 10 | 5 |
| mIBI Metric Score: | | 40 |

Supplemental Metrics

| | HBI | Value |
|----------------------|-----|-------|
| | HBI | 5.83 |
| Shannon-Weaver Index | | 2.91 |
| Shannon Equitability | | 0.92 |
| % Dominant 3 Taxon | | 31.67 |
| % Chironomidae | | 53.33 |

Residuals

| Identifier | Date | Count | %PSE |
|------------|-----------|-------|-------|
| MSG | 9/23/2019 | 2 | 96.67 |



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|----------------|-----------|-------------------|----------|---------------|-------------|----------------|
| OML-05-0031 | 19T-013 | MHAB | AB38430 | 190812602 | 8/12/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Laughery Creek | | Salem Rd | | 050902030505 | | 05090203060100 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4343486.78 | 651741.12 | 55 | 3.294 | 68.782 | 57 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|---------------------------------------------------------|-------|-----------------------------------------------------------------------|---------------|
| 1552 (Tubificidae with bifid chetae and no hair chetae) | 1 | | |
| 1555 (Tubificidae with bifid chetae and hair) | 1 | | |
| 1357 (BRANCHIOBDELLIDAE) | 2 | | 6 |
| 1090 (Physa) | 1 | | 8 |
| 2211 (Pleurocera) | 1 | | |
| 2156 (Corbicula fluminea) | 2 | | 6 |
| 1083 (ACARI) | 3 | | 4 |
| 9050 (Hyaella) | 5 | | |
| 8996 (Orconectes) | 1 | Female, ID'ed using rostrum based on Crocker & Barr 1968 | 4 |
| 9016 (Orconectes sloanii) | 2 | Form II males | |
| 1012 (BAETIDAE) | 2 | Head only, truncate palps | 4 |
| 7011 (Acerpenna pygmaea) | 1 | Slide J19-001.1 | 2 |
| 9361 (Caenis dimunata grp.) | 4 | latipennis probably | |
| 3245 (Boyeria vinosa) | 1 | | 4 |
| 1021 (GOMPHIDAE) | 1 | Dromogomphus or Phanogomphus, small, not sure if S8/9 ridge developed | 1 |
| 3116 (Progomphus obscurus) | 1 | small, hooks not developed fully, not colored | |
| 3546 (Enallagma) | 8 | early instar, one might be divagans or antennatum | 9 |
| 3549 (Enallagma divagans) | 6 | small, tracheal pigments undeveloped | |
| 3568 (Argia) | 9 | gills gone | 5 |
| 3569 (Argia apicalis) | 1 | | |
| 3572 (Argia tibialis) | 7 | | |
| 7122 (Microvelia) | 1 | nymph | |
| 7123 (Microvelia americana) | 1 | Male; Hairs difficult to see on capsule, initially | |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 42 | 5 |
| Total No. Individuals: | 123 | 1 |
| EPT Taxa: | 7 | 3 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 48 | 1 |
| % Non-insects excluding Astacidae: | 13.01 | 5 |
| Diptera Taxa: | 10 | 3 |
| % Intolerant (0-3): | 10.57 | 1 |
| % Tolerant (8-10): | 8.94 | 5 |
| % Predators FFG 1: | 30.89 | 3 |
| % Shredders + Scrapers FFG 1: | 4.07 | 1 |
| % Collector-Filterers FFG 1: | 17.89 | 3 |
| % Sprawlers: | 1.63 | 1 |
| mIBI Metric Score: | | 32 |

Supplemental Metrics

| | HBI | |
|----------------------|------|-------|
| | 4.83 | |
| Shannon-Weaver Index | | 3.42 |
| Shannon Equitability | | 0.92 |
| % Dominant 3 Taxon | | 22.76 |
| % Chironomidae | | 20.33 |



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| TAXON | COUNT | NOTES | HBI Tolerance |
|-----------------------------------------------------------------------------|-------|------------------------------------------------|---------------|
| | | keyed to torquata | |
| 3851 (<i>Berosus peregrinus</i>) | 2 | | 6 |
| 7309 (<i>Stenelmis crenata</i>) | 2 | 1 male, 1 female, J19-001.2 | 5 |
| 7296 (<i>Dubiraphia</i>) | 1 | larva | 5 |
| 7300 (<i>Dubiraphia vittata</i>) | 5 | 2 male, 3 female J19-001.3 PL = ? 245 µm | |
| 7295 (<i>Ancyronyx variegatus</i>) | 11 | all adults | 4 |
| 3002 (<i>Chimarra</i>) | 2 | | 4 |
| 1057 (HYDROPSYCHIDAE) | 1 | very small, missing abdomen | 4 |
| 3432 (<i>Cheumatopsyche</i>) | 8 | | 3 |
| 8980 (<i>Hydropsyche betteni</i> grp) | 2 | | |
| 9370 (<i>Ceratopogon</i> grp.) | 2 | | 8 |
| 9284 (<i>Tribelos jucundus</i>) | 5 | | |
| 8099 (<i>Cryptochironomus</i>) | 2 | | 5 |
| 8211 (<i>Stictochironomus</i>) | 1 | | 4 |
| 8228 (<i>Cladotanytarsus</i>) | 1 | | 4 |
| 8235 (<i>Paratanytarsus</i>) | 2 | | 4 |
| 8238 (<i>Rheotanytarsus</i>) | 3 | | 3 |
| 8241 (<i>Tanytarsus</i>) | 6 | | 4 |
| 9277 (<i>Polypedilum</i> (<i>Tripodura</i>) <i>scalaenum</i> grp) | 3 | | |
| 9241 (<i>Polypedilum</i> (<i>Polypedilum</i>) <i>illinoense</i> grp.) | 2 | | |

Residuals

| Identifier | Date | Count | %PSE |
|------------|------------|-------|-------|
| JMB | 10/31/2019 | 2 | 98.37 |



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|----------------|-----------|-------------------|----------|---------------|-------------|----------------|
| OML-05-0030 | 19T-012 | MHAB | AB38443 | 190812603 | 8/12/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Laughery Creek | | SR 48 | | 050902030505 | | 05090203060100 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4340135.14 | 651333.85 | 55 | 2.896 | 115.769 | 61 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|------------------------------------------------|-------|---------------------------------------------------------|---------------|
| 1555 (Tubificidae with bifid chetae and hair) | 1 | | |
| 2211 (Pleurocera) | 1 | | |
| 1083 (ACARI) | 2 | | 4 |
| 3049 (Stenacron interpunctatum) | 1 | Slide S19-097.1 | 7 |
| 9361 (Caenis dimunata grp.) | 6 | | |
| 3202 (Hexagenia) | 1 | early instar; length ~5mm | 4 |
| 3245 (Boyeria vinosa) | 1 | | 4 |
| 7026 (Calopteryx maculata) | 1 | | |
| 3546 (Enallagma) | 19 | 5 no gills; 14 gills without distinct gill pattern | 9 |
| 3549 (Enallagma divagans) | 5 | | |
| 3568 (Argia) | 2 | no gills | 5 |
| 3572 (Argia tibialis) | 1 | | |
| 7207 (Belostoma) | 1 | nymph | |
| 7220 (Ranatra nigra) | 1 | | 4 |
| 7111 (Rheumatobates) | 1 | nymph | |
| 7117 (Trepobates) | 3 | nymphs | |
| 7118 (Trepobates inermis) | 1 | adult (1F) | |
| 7128 (Microvelia hinei) | 1 | adult | |
| 3601 (Peltodytes lengi) | 2 | adults | |
| 3602 (Peltodytes muticus) | 1 | adult | |
| 1096 (SCIRTIDAE) | 1 | larva | 5 |
| 7317 (Stenelmis sexlineata) | 2 | adults | |
| 7296 (Dubiraphia) | 2 | adults (2F) | 5 |
| 7295 (Ancyronyx variegatus) | 7 | adults | 4 |
| 7325 (HETEROCERIDAE) | 1 | adult | |
| 7732 (Anopheles) | 2 | | |
| 7984 (Procladius) | 4 | | 7 |
| 9248 (Ablabesmyia (Ablabesmyia) mallochi grp.) | 3 | Slide Mounted Specimens: Slides S19-098 through S19-100 | |
| 8086 (Chironomus) | 1 | | 8 |
| 8099 (Cryptochironomus) | 1 | | 5 |
| 8126 (Glyptotendipes) | 1 | | 6 |
| 8177 (Phaenopsectra punctipes) | 1 | | 4 |
| 8235 (Paratanytarsus) | 3 | | 4 |
| 8241 (Tanytarsus) | 2 | | 4 |
| 9240 (Polypedilum (Polypedilum) fallax grp.) | 1 | | |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 37 | 3 |
| Total No. Individuals: | 91 | 1 |
| EPT Taxa: | 3 | 1 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 21.74 | 5 |
| % Non-insects excluding Astacidae: | 4.4 | 5 |
| Diptera Taxa: | 12 | 3 |
| % Intolerant (0-3): | 0 | 1 |
| % Tolerant (8-10): | 21.98 | 3 |
| % Predators FFG 1: | 45.05 | 5 |
| % Shredders + Scrapers FFG 1: | 2.2 | 1 |
| % Collector-Filterers FFG 1: | 6.59 | 5 |
| % Sprawlers: | 6.59 | 5 |
| mIBI Metric Score: | | 38 |

Supplemental Metrics

| | HBI | |
|----------------------|------|-------|
| | 6.44 | |
| Shannon-Weaver Index | | 3.15 |
| Shannon Equitability | | 0.87 |
| % Dominant 3 Taxon | | 35.16 |
| % Chironomidae | | 25.27 |



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MHAB Report

| TAXON | COUNT | NOTES | HBI Tolerance |
|-----------------------------------------------------|-------|-------|------------------|
| 9241 (Polypedilum (Polypedilum) illinoense grp.) | 6 | | |
| 8274 (Stratiomys) | 1 | | |

Residuals

| Identifier | Date | Count | %PSE |
|------------|------|-------|------|
|------------|------|-------|------|



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|-------------|-----------|-------------------|----------|---------------|-------------|----------------|
| OML-05-0024 | 19T-006 | MHAB | AB38448 | 190812804 | 8/12/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Tub Creek | | CR 250 W | | 050902030501 | | 05090203060020 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4346560 | 646203.28 | 55 | 6.436 | 11.356 | 58 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|-------------------------------------|-------|----------------------------------------------------------------------|---------------|
| 1357 (BRANCHIOBELLELLIDAE) | 6 | one on slide G19-006.16 | 6 |
| 2156 (Corbicula fluminea) | 2 | | 6 |
| 9016 (Orconectes sloanii) | 8 | 3 form II males + 5 females | |
| 3020 (Stenonema femoratum) | 1 | | 3 |
| 3049 (Stenacron interpunctatum) | 3 | one is smaller instar; see slide G19-001.1 | 7 |
| 3079 (Paracloeodes minutus) | 2 | see slide G19-001.2 | |
| 3365 (Proclleon) | 1 | | |
| 9347 (Proclleon viridoculare) | 1 | | |
| 3183 (Caenis) | 11 | triad of dots not apparent, or small instars, one on slide G19-005.7 | 3 |
| 9361 (Caenis dimunata grp.) | 49 | | |
| 3109 (Isonychia) | 1 | | 2 |
| 3116 (Progomphus obscurus) | 1 | small instar | |
| 3099 (Hagenius brevistylus) | 1 | | 1 |
| 7026 (Calopteryx maculata) | 4 | | |
| 3540 (Ischnura) | 1 | | 9 |
| 3546 (Enallagma) | 19 | no gills or poorly developed pigment/small instars | 9 |
| 3549 (Enallagma divagans) | 2 | | |
| 9095 (Argia fumipennis) | 1 | | |
| 7032 (Argia moesta) | 1 | | |
| 3572 (Argia tibialis) | 1 | | |
| 1041 (CORIXIDAE) | 2 | nymphs | 5 |
| 7111 (Rheumatobates) | 1 | nymph | |
| 7130 (Rhagovelia) | 1 | nymph | |
| 7122 (Microvelia) | 1 | nymph or female? | |
| 7123 (Microvelia americana) | 2 | | |
| 3600 (Peltodytes duodecimpunctatus) | 1 | | |
| 3875 (Tropisternus natator) | 1 | | |
| 3886 (Enochrus sayi) | 1 | 1 adult | |
| 3959 (Helichus lithophilus) | 1 | | |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 55 | 5 |
| Total No. Individuals: | 257 | 3 |
| EPT Taxa: | 14 | 5 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 62.07 | 1 |
| % Non-insects excluding Astacidae: | 3.11 | 5 |
| Diptera Taxa: | 16 | 5 |
| % Intolerant (0-3): | 22.18 | 3 |
| % Tolerant (8-10): | 7.78 | 5 |
| % Predators FFG 1: | 17.51 | 1 |
| % Shredders + Scrapers FFG 1: | 2.33 | 1 |
| % Collector-Filterers FFG 1: | 24.51 | 1 |
| % Sprawlers: | 2.72 | 1 |
| mIBI Metric Score: | | 36 |

Supplemental Metrics

| | HBI | Value |
|----------------------|-----|-------|
| | HBI | 4.66 |
| Shannon-Weaver Index | | 3.2 |
| Shannon Equitability | | 0.8 |
| % Dominant 3 Taxon | | 39.69 |
| % Chironomidae | | 22.57 |



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| TAXON | COUNT | NOTES | HBI Tolerance |
|-------------------------------------------------------------------|-------|-----------------------------------------------------|------------------|
| 7308 (<i>Stenelmis bicarinata</i>) | 2 | 1 male + 1 female?, see slide G19-001.3 | 5 |
| 7309 (<i>Stenelmis crenata</i>) | 4 | 3 males + 1 female?, see slide G19-001.4 +.5 +.6 | 5 |
| 7317 (<i>Stenelmis sexlineata</i>) | 4 | 3 females + 1 male, see slide G19-001.7 | |
| 7295 (<i>Ancyronyx variegatus</i>) | 1 | | 4 |
| 1045 (PHILOPOTAMIDAE) | 1 | early instar | 3 |
| 3267 (<i>Chimarra obscura</i>) | 2 | | 4 |
| 1057 (HYDROPSYCHIDAE) | 4 | early instars | 4 |
| 3432 (<i>Cheumatopsyche</i>) | 34 | | 3 |
| 8980 (<i>Hydropsyche betteni</i> grp) | 14 | | |
| 9319 (<i>Ceratopsyche</i> "checkerboard" grp) | 1 | | |
| 7732 (<i>Anopheles</i>) | 4 | 1 pupa + 3 larvae | |
| 7977 (<i>Zavrelimyia</i>) | 1 | | 4 |
| 7984 (<i>Procladius</i>) | 1 | | 7 |
| 7926 (<i>Tanypodinae</i> (Subfamily)) | 1 | | |
| 8083 (<i>Chironomini</i> (Tribe)) | 1 | | |
| 9261 (<i>Thienemannimyia</i> grp.) | 1 | | |
| 8006 (<i>Orthoclaadiinae</i> (Subfamily)) | 1 | | |
| 8099 (<i>Cryptochironomus</i>) | 5 | | 5 |
| 8112 (<i>Dicrotendipes</i>) | 7 | | 6 |
| 8211 (<i>Stictochironomus</i>) | 1 | | 4 |
| 8228 (<i>Cladotanytarsus</i>) | 14 | | 4 |
| 8235 (<i>Paratanytarsus</i>) | 6 | 1 pupa + 5 larvae | 4 |
| 8238 (<i>Rheotanytarsus</i>) | 8 | | 3 |
| 8241 (<i>Tanytarsus</i>) | 7 | | 4 |
| 9238 (<i>Polypedilum</i> (<i>Uresipedilum</i>) <i>flavum</i>) | 4 | | |
| 1074 (EMPIDIDAE) | 1 | small instar | 6 |

Residuals

| Identifier | Date | Count | %PSE |
|------------|-----------|-------|-------|
| MSG | 9/19/2019 | 3 | 98.83 |



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|-------------|----------|-------------------|----------|---------------|-------------|----------------|
| OML-05-0029 | 19T-011 | MHAB | AB38444 | 190813701 | 8/13/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Ripley Cr | | SR 129 | | 050902030504 | | 05090203060090 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4341600.32 | 654623.3 | 55 | 8.298 | 38.692 | 72 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|---------------------------------|-------|-------------------------------------------|---------------|
| 1357 (BRANCHIOBELLELLIDAE) | 20 | | 6 |
| 1087 (Ferrissia) | 1 | | 6 |
| 2156 (Corbicula fluminea) | 1 | | 6 |
| 1092 (SPHAERIIDAE) | 3 | ~1mm long each | 8 |
| 1083 (ACARI) | 1 | | 4 |
| 9008 (Orconectes rusticus) | 3 | Form II males | 6 |
| 1251 (ISOTOMIDAE) | 2 | | |
| 1017 (HEPTAGENIIDAE) | 1 | no gills | 4 |
| 3019 (Maccaffertium exiguum) | 2 | see slide G19-027.1 | 2 |
| 3020 (Stenonema femoratum) | 1 | | 3 |
| 3049 (Stenacron interpunctatum) | 1 | | 7 |
| 1012 (BAETIDAE) | 2 | very small instars | 4 |
| 7011 (Acerpenna pygmaea) | 7 | one missing 7th pair of gills | 2 |
| 3365 (Procloeon) | 2 | no gills, see slides G19-027.2 +.3+.4 | |
| 9361 (Caenis dimunata grp.) | 5 | | |
| 7026 (Calopteryx maculata) | 1 | | |
| 3546 (Enallagma) | 5 | with poorly developed gill pigmentation | 9 |
| 3549 (Enallagma divagans) | 7 | | |
| 7216 (Ranatra) | 1 | small instar | |
| 7111 (Rheumatobates) | 1 | | |
| 7117 (Trepobates) | 1 | nymph | |
| 7118 (Trepobates inermis) | 2 | females | |
| 7130 (Rhagovelia) | 1 | nymph | |
| 7132 (Rhagovelia oriander) | 3 | females | |
| 7122 (Microvelia) | 1 | nymph | |
| 3587 (Haliphus fasciatus) | 1 | adult | |
| 3959 (Helichus lithophilus) | 2 | adults | |
| 7307 (Stenelmis) | 2 | larvae | 5 |
| 7309 (Stenelmis crenata) | 4 | 2 females + 2 males, see slide G19-027.5 | 5 |
| 7317 (Stenelmis sexlineata) | 6 | adults | |
| 7296 (Dubiraphia) | 1 | female | 5 |
| 7295 (Ancyronyx variegatus) | 1 | adult | 4 |
| 1045 (PHILOPOTAMIDAE) | 1 | very small instar-frontoclypeal notch not | 3 |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 48 | 5 |
| Total No. Individuals: | 227 | 3 |
| EPT Taxa: | 11 | 5 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 33.33 | 3 |
| % Non-insects excluding Astacidae: | 11.45 | 5 |
| Diptera Taxa: | 13 | 3 |
| % Intolerant (0-3): | 35.68 | 5 |
| % Tolerant (8-10): | 3.52 | 5 |
| % Predators FFG 1: | 9.25 | 1 |
| % Shredders + Scrapers FFG 1: | 3.08 | 1 |
| % Collector-Filterers FFG 1: | 49.34 | 1 |
| % Sprawlers: | 1.76 | 1 |
| mIBI Metric Score: | | 38 |

Supplemental Metrics

| | HBI | |
|----------------------|------|-------|
| | 4.08 | |
| Shannon-Weaver Index | | 2.87 |
| Shannon Equitability | | 0.74 |
| % Dominant 3 Taxon | | 51.98 |
| % Chironomidae | | 15.86 |



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MHAB Report

| TAXON | COUNT | NOTES | HBI Tolerance |
|-----------------------------------------------------|-------|--------------------------|---------------|
| | | developed? Wormaldia? | |
| 3267 (Chimarra obscura) | 28 | | 4 |
| 3432 (Cheumatopsyche) | 70 | | 3 |
| 7984 (Procladius) | 1 | | 7 |
| 7926 (Tanypodinae (Subfamily)) | 2 | | |
| 8083 (Chironomini (Tribe)) | 1 | pupa | |
| 8227 (Tanytarsini (Tribe)) | 1 | | |
| 9248 (Ablabesmyia (Ablabesmyia) mallochi grp.) | 3 | | |
| 9261 (Thienemannimyia grp.) | 3 | | |
| 8017 (Corynoneura) | 3 | | 4 |
| 8112 (Dicrotendipes) | 1 | | 6 |
| 8167 (Paratendipes) | 1 | | 6 |
| 8241 (Tanytarsus) | 8 | | 4 |
| 9277 (Polypedilum (Tripodura) scalaenum grp) | 1 | | |
| 9238 (Polypedilum (Uresipedilum) flavum) | 9 | | |
| 9241 (Polypedilum (Polypedilum) illinoense grp.) | 2 | | |

Residuals

| Identifier | Date | Count | %PSE |
|------------|------|-------|------|
|------------|------|-------|------|



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| | | | | | | |
|--------------------|----------------|--------------------------|-----------------|----------------------|--------------------|----------------|
| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
| OML-05-0027 | 19T-009 | MHAB | AB38446 | 190812706 | 8/12/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Ripley Cr | | SR 48 | | 050902030504 | | 05090203060080 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4340426.96 | 655251.47 | 55 | 5.831 | 27.588 | 71 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|---------------------------------|-------|--------------------------------------------------------------------------------------------------|---------------|
| 1357 (BRANCHIOBELLELLIDAE) | 26 | | 6 |
| 1206 (PLANORBIDAE) | 2 | 1 limpet with broken shell | 6 |
| 2211 (Pleurocera) | 2 | | |
| 2156 (Corbicula fluminea) | 1 | | 6 |
| 1092 (SPHAERIIDAE) | 3 | | 8 |
| 2181 (Sphaerium) | 4 | | 6 |
| 1083 (ACARI) | 2 | | 4 |
| 9031 (Lirceus) | 1 | | 8 |
| 9036 (Caecidotea) | 1 | | 8 |
| 9050 (Hyalella) | 11 | | |
| 8996 (Orconectes) | 1 | MII | 4 |
| 9008 (Orconectes rusticus) | 3 | 1F; 2M Form II | 6 |
| 3020 (Stenonema femoratum) | 20 | | 3 |
| 3049 (Stenacron interpunctatum) | 13 | Slide S19-017.4 and S19-017.5 | 7 |
| 3365 (Procloeon) | 5 | Slides S19-018.1 and S19-018.2 | |
| 3183 (Caenis) | 2 | 1 missing abdomen; 1 early instar | 3 |
| 9361 (Caenis dimunata grp.) | 49 | | |
| 3546 (Enallagma) | 4 | 3 no gills; 1 small instar | 9 |
| 3568 (Argia) | 2 | no gills | 5 |
| 1038 (GERRIDAE) | 2 | nymphs | |
| 7113 (Rheumatobates rileyi) | 1 | male, adult | |
| 7117 (Trepobates) | 1 | nymph | |
| 7118 (Trepobates inermis) | 1 | F adult | |
| 7132 (Rhagovelia oriander) | 1 | adult | |
| 3959 (Helichus lithophilus) | 1 | 1M | |
| 3960 (Helichus basalis) | 2 | 1M and 1F | |
| 7293 (Psephenus herricki) | 1 | larva | 4 |
| 7307 (Stenelmis) | 6 | 6L | 5 |
| 7309 (Stenelmis crenata) | 4 | Slide S19-017.1 | 5 |
| 7317 (Stenelmis sexlineata) | 6 | | |
| 7296 (Dubiraphia) | 2 | larvae | 5 |
| 7300 (Dubiraphia vittata) | 16 | Slide S19-017.2 (penis length = 265 µm); Slide S19-017.3 (penis length = 270 µm); Adults (8F and | |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 48 | 5 |
| Total No. Individuals: | 230 | 3 |
| EPT Taxa: | 6 | 3 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 20 | 5 |
| % Non-insects excluding Astacidae: | 23.04 | 3 |
| Diptera Taxa: | 14 | 5 |
| % Intolerant (0-3): | 10 | 1 |
| % Tolerant (8-10): | 3.91 | 5 |
| % Predators FFG 1: | 6.52 | 1 |
| % Shredders + Scrapers FFG 1: | 6.09 | 1 |
| % Collector-Filterers FFG 1: | 5.22 | 5 |
| % Sprawlers: | 1.74 | 1 |
| mIBI Metric Score: | | 38 |

Supplemental Metrics

| | HBI | |
|----------------------|------|-------|
| | 5.27 | |
| Shannon-Weaver Index | | 3.09 |
| Shannon Equitability | | 0.8 |
| % Dominant 3 Taxon | | 41.3 |
| % Chironomidae | | 13.04 |



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| TAXON | COUNT | NOTES | HBI Tolerance |
|-----------------------------------------------------|-------|------------------------------------------------------------|---------------|
| | | 8M) | |
| 7295 (Ancyronyx variegatus) | 2 | 2A | 4 |
| 3432 (Cheumatopsyche) | 1 | | 3 |
| 7723 (Dixella) | 1 | | |
| 7940 (Natarsia) | 1 | | 6 |
| 7984 (Procladius) | 3 | | 7 |
| 7926 (Tanypodinae (Subfamily)) | 1 | pupa | |
| 9248 (Ablabesmyia (Ablabesmyia) mallochi grp.) | 4 | | |
| 8099 (Cryptochironomus) | 1 | | 5 |
| 8112 (Dicrotendipes) | 1 | | 6 |
| 8179 (Polypedilum) | 1 | | |
| 8211 (Stictochironomus) | 10 | Slide Mounted Specimens: Slides S19-019 through S19-024 | 4 |
| 8228 (Cladotanytarsus) | 2 | | 4 |
| 8235 (Paratanytarsus) | 1 | | 4 |
| 8241 (Tanytarsus) | 3 | | 4 |
| 9277 (Polypedilum (Tripodura) scalaenum grp) | 1 | | |
| 9241 (Polypedilum (Polypedilum) illinoense grp.) | 1 | | |

Residuals

| Identifier | Date | Count | %PSE |
|------------|-----------|-------|------|
| SEZ | 9/24/2020 | 0 | 100 |



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|-----------------|-----------|-------------------|----------|---------------|-------------|----------------|
| OML-05-0034 | 19T-020 | MHAB | AB38440 | 190812607 | 8/12/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Castators Creek | | SR 350 | | 050902030506 | | 05090203060130 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4334881.18 | 651821.62 | 55 | 28.916 | 7.371 | 59 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|------------------------------------------------|-------|---------------------------------------------|---------------|
| 1357 (BRANCHIOBDELLIDAE) | 11 | | 6 |
| 1205 (PLEUROCERIDAE) | 1 | very small | 6 |
| 2211 (Pleurocera) | 2 | | |
| 9050 (Hyaella) | 5 | | |
| 9008 (Orconectes rusticus) | 2 | males | 6 |
| 3020 (Stenonema femoratum) | 5 | | 3 |
| 3049 (Stenacron interpunctatum) | 1 | see slide G19-056.1 | 7 |
| 1012 (BAETIDAE) | 3 | no gills | 4 |
| 3066 (Baetis intercalaris) | 3 | | 3 |
| 9361 (Caenis diminuta grp.) | 4 | | |
| 3245 (Boyeria vinosa) | 1 | | 4 |
| 9351 (Phanogomphus) | 1 | | |
| 3542 (Ischnura posita) | 1 | | |
| 7189 (Sigara) | 1 | male | |
| 7230 (Neoplea striola) | 1 | | |
| 1038 (GERRIDAE) | 2 | 1 with head only and 1 small damaged instar | |
| 7118 (Trepobates inermis) | 1 | female | |
| 7099 (Aquarius remigis) | 2 | females | |
| 9112 (Laccophilus fasciatus) | 1 | | |
| 3961 (Helichus fastigiatus) | 1 | | |
| 7293 (Psephenus herricki) | 4 | 2 adults + 2 larvae | 4 |
| 7307 (Stenelmis) | 1 | larva | 5 |
| 7300 (Dubiraphia vittata) | 1 | see slides G19-056.2 penis ~260 µm | |
| 3797 (Nigronia serricornis) | 1 | | 4 |
| 3003 (Chimarra aterrima) | 2 | | 2 |
| 3432 (Cheumatopsyche) | 4 | | 3 |
| 9319 (Ceratopsyche "checkerboard" grp) | 1 | | |
| 7732 (Anopheles) | 2 | | |
| 7814 (Simulium) | 7 | | 5 |
| 7984 (Procladius) | 1 | | 7 |
| 9153 (Tribelos) | 1 | | 5 |
| 7926 (Tanypodinae (Subfamily)) | 1 | | |
| 9248 (Ablabesmyia (Ablabesmyia) mallochi grp.) | 5 | | |
| 9261 (Thienemannimyia grp.) | 4 | | |
| 9296 (Microtendipes pedellus) | 3 | | |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 42 | 5 |
| Total No. Individuals: | 97 | 1 |
| EPT Taxa: | 8 | 5 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 4.17 | 5 |
| % Non-insects excluding Astacidae: | 19.59 | 3 |
| Diptera Taxa: | 15 | 5 |
| % Intolerant (0-3): | 14.43 | 1 |
| % Tolerant (8-10): | 0 | 5 |
| % Predators FFG 1: | 11.34 | 1 |
| % Shredders + Scrapers FFG 1: | 6.19 | 1 |
| % Collector-Filterers FFG 1: | 15.46 | 3 |
| % Sprawlers: | 1.03 | 1 |
| mIBI Metric Score: | | 36 |

Supplemental Metrics

| | HBI | |
|----------------------|------|-------|
| | 4.55 | |
| Shannon-Weaver Index | | 3.45 |
| Shannon Equitability | | 0.92 |
| % Dominant 3 Taxon | | 23.71 |
| % Chironomidae | | 24.74 |



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MHAB Report

| TAXON | COUNT | NOTES | HBI Tolerance |
|-------------------------------------------------|-------|-------|------------------|
| grp) | | | |
| 9335 (Paratendipes albimanus grp) | 3 | | |
| 8211 (Stictochironomus) | 1 | | 4 |
| 8235 (Paratanytarsus) | 1 | | 4 |
| 9277 (Polypedilum (Tripodura) scalaenum grp) | 1 | | |
| 9238 (Polypedilum (Uresipedilum) flavum) | 2 | | |
| 9240 (Polypedilum (Polypedilum) fallax grp.) | 1 | | |
| 8320 (Chrysops) | 1 | | 5 |

Residuals

| Identifier | Date | Count | %PSE |
|------------|------|-------|------|
|------------|------|-------|------|



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|----------------|-----------|-------------------|----------|---------------|-------------|----------------|
| OML060-0007 | 19T-014 | MHAB | AB38455 | 190812702 | 8/12/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Laughery Creek | | SR 229 | | 050902030505 | | 05090203060040 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4345476.77 | 651198.83 | 55 | 5.865 | 39.718 | 48 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|---------------------------------|-------|---------------------------------------------------------|---------------|
| 1357 (BRANCHIOBDELLIDAE) | 5 | | 6 |
| 1205 (PLEUROCERIDAE) | 1 | < 1 mm long | 6 |
| 2211 (Pleurocera) | 1 | | |
| 1092 (SPHAERIIDAE) | 2 | one with shell breaking away | 8 |
| 1083 (ACARI) | 6 | | 4 |
| 9008 (Orconectes rusticus) | 3 | form II males | 6 |
| 9156 (Maccaffertium) | 2 | see slide G19-022.1 | |
| 3020 (Stenonema femoratum) | 7 | | 3 |
| 3049 (Stenacron interpunctatum) | 1 | see slide G19-022.2 | 7 |
| 1012 (BAETIDAE) | 3 | heads only | 4 |
| 9129 (Acerpenna) | 1 | see slide G19-022.4, no gills | 4 |
| 3365 (Proclleon) | 3 | see slides G19-022.3+.5+.6 | |
| 9361 (Caenis dimunata grp.) | 27 | | |
| 3245 (Boyeria vinosa) | 1 | | 4 |
| 3549 (Enallagma divagans) | 3 | | |
| 3568 (Argia) | 1 | small instar | 5 |
| 7117 (Trepobates) | 1 | nymph | |
| 7130 (Rhagovelia) | 3 | nymphs | |
| 7132 (Rhagovelia oriander) | 4 | 3 females (one with prosternal process broken) + 1 male | |
| 7123 (Microvelia americana) | 1 | female | |
| 3854 (Berosus aculeatus) | 1 | female | |
| 3863 (Paracymus) | 1 | 1 adult | |
| 1096 (SCIRTIDAE) | 1 | 1 larva | 5 |
| 3959 (Helichus lithophilus) | 1 | adult | |
| 7293 (Psephenus herricki) | 1 | 1 larva | 4 |
| 7307 (Stenelmis) | 12 | 12 larvae | 5 |
| 7317 (Stenelmis sexlineata) | 10 | 10 adults | |
| 3267 (Chimarra obscura) | 6 | | 4 |
| 3432 (Cheumatopsyche) | 26 | | 3 |
| 7732 (Anopheles) | 1 | | |
| 7830 (Atrichopogon) | 1 | | 5 |
| 7833 (Forcipomyia) | 1 | | |
| 1073 (CHIRONOMIDAE(all other)) | 1 | | 6 |
| 7984 (Procladius) | 1 | | 7 |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 51 | 5 |
| Total No. Individuals: | 181 | 3 |
| EPT Taxa: | 9 | 5 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 13.95 | 5 |
| % Non-insects excluding Astacidae: | 8.29 | 5 |
| Diptera Taxa: | 22 | 5 |
| % Intolerant (0-3): | 18.23 | 3 |
| % Tolerant (8-10): | 1.1 | 5 |
| % Predators FFG 1: | 6.08 | 1 |
| % Shredders + Scrapers FFG 1: | 9.94 | 1 |
| % Collector-Filterers FFG 1: | 22.1 | 1 |
| % Sprawlers: | 1.1 | 1 |
| mIBI Metric Score: | | 40 |

Supplemental Metrics

| | HBI | |
|----------------------|-----|-------|
| | HBI | 4.29 |
| Shannon-Weaver Index | | 3.33 |
| Shannon Equitability | | 0.85 |
| % Dominant 3 Taxon | | 35.91 |
| % Chironomidae | | 23.76 |



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| TAXON | COUNT | NOTES | HBI Tolerance |
|----------------------------------------------------------|-------|-------|------------------|
| 8083 (Chironomini (Tribe)) | 1 | | |
| 9248 (Ablabesmyia (Ablabesmyia) mallochi grp.) | 5 | | |
| 9250 (Ablabesmyia (Ablabesmyia) rhamphae grp.) | 1 | | |
| 9261 (Thienemannimyia grp.) | 5 | | |
| 9284 (Tribelos jucundus) | 2 | | |
| 8112 (Dicrotendipes) | 2 | | 6 |
| 8126 (Glyptotendipes) | 2 | | 6 |
| 9166 (Paracladopelma nereis) | 3 | | |
| 8172 (Phaenopsectra) | 1 | | 7 |
| 8211 (Stictochironomus) | 2 | | 4 |
| 8228 (Cladotanytarsus) | 4 | | 4 |
| 8241 (Tanytarsus) | 2 | | 4 |
| 9277 (Polypedilum (Tripodura) scalaenum grp) | 1 | | |
| 9278 (Polypedilum (Tripodura) halterale-simulans grp) | 1 | | |
| 9238 (Polypedilum (Uresipedilum) flavum) | 3 | | |
| 9240 (Polypedilum (Polypedilum) fallax grp.) | 1 | | |
| 9241 (Polypedilum (Polypedilum) illinoense grp.) | 5 | | |

Residuals

| Identifier | Date | Count | %PSE |
|------------|-----------|-------|------|
| MSG | 9/26/2019 | 0 | 100 |



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|----------------|----------|-------------------|----------|---------------|-------------|----------------|
| OML-05-0009 | 19T-005 | MHAB | AB38449 | 190812803 | 8/12/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Laughery Creek | | CR 250 W | | 050902030501 | | 05090203060010 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4346466.64 | 646195.5 | 55 | 6.416 | 13.253 | 58 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|---------------------------------|-------|---------------------------------------------------------|---------------|
| 1357 (BRANCHIOBDELLIDAE) | 1 | | 6 |
| 1233 (ERPOBDELLIDAE) | 5 | | |
| 1087 (Ferrissia) | 3 | One specimen's shell broke while IDing. | 6 |
| 1206 (PLANORBIDAE) | 1 | Shell at aperture broken off. | 6 |
| 2156 (Corbicula fluminea) | 14 | | 6 |
| 1092 (SPHAERIIDAE) | 1 | | 8 |
| 8996 (Orconectes) | 24 | 12F; 12M Form II | 4 |
| 9008 (Orconectes rusticus) | 7 | 1F; 6M Form II | 6 |
| 1017 (HEPTAGENIIDAE) | 1 | missing abdomen and part of thorax; early instar | 4 |
| 3020 (Stenonema femoratum) | 2 | | 3 |
| 3049 (Stenacron interpunctatum) | 2 | Slide S19-001.2 (mouthparts); 1 missing gills | 7 |
| 9361 (Caenis dimunata grp.) | 14 | | |
| 3245 (Boyeria vinosa) | 1 | | 4 |
| 7026 (Calopteryx maculata) | 2 | | |
| 3546 (Enallagma) | 9 | 1 no gills; 8 indistinct gill patterns | 9 |
| 7132 (Rhagovelia oriander) | 3 | | |
| 7122 (Microvelia) | 2 | 2 nymphs | |
| 7123 (Microvelia americana) | 1 | | |
| 3730 (Neoporus dimidiatus) | 1 | | |
| 3959 (Helichus lithophilus) | 2 | 2F | |
| 3960 (Helichus basalis) | 1 | 1F | |
| 7307 (Stenelmis) | 8 | 8L | 5 |
| 7309 (Stenelmis crenata) | 2 | 2A; S19-001.3 | 5 |
| 7317 (Stenelmis sexlineata) | 16 | 16A | |
| 7300 (Dubiraphia vittata) | 4 | 4A (1M and 3F); Slide S19-001.1 (penis length = 245 µm) | |
| 1045 (PHILOPOTAMIDAE) | 1 | no abdominal gills; early instar | 3 |
| 3432 (Cheumatopsyche) | 5 | | 3 |
| 7732 (Anopheles) | 1 | | |
| 7940 (Natarsia) | 2 | Slide Mounted | 6 |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 37 | 3 |
| Total No. Individuals: | 153 | 3 |
| EPT Taxa: | 6 | 3 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 31.58 | 3 |
| % Non-insects excluding Astacidae: | 16.34 | 5 |
| Diptera Taxa: | 10 | 3 |
| % Intolerant (0-3): | 7.19 | 1 |
| % Tolerant (8-10): | 6.54 | 5 |
| % Predators FFG 1: | 15.03 | 1 |
| % Shredders + Scrapers FFG 1: | 9.15 | 1 |
| % Collector-Filterers FFG 1: | 16.34 | 3 |
| % Sprawlers: | 1.31 | 1 |
| mIBI Metric Score: | | 32 |

Supplemental Metrics

| | HBI | Value |
|----------------------|-----|-------|
| | HBI | 5.2 |
| Shannon-Weaver Index | | 3.09 |
| Shannon Equitability | | 0.86 |
| % Dominant 3 Taxon | | 35.29 |
| % Chironomidae | | 12.42 |



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| TAXON | COUNT | NOTES | HBI Tolerance |
|----------------------------------------------------------|-------|---------------------------------------------|------------------|
| | | Specimens: Slides S19-002 and S19-003 | |
| 9261 (Thienemannimyia grp.) | 4 | | |
| 8006 (Orthoclaadiinae (Subfamily)) | 1 | | |
| 8099 (Cryptochironomus) | 2 | | 5 |
| 8211 (Stictochironomus) | 2 | | 4 |
| 8228 (Cladotanytarsus) | 2 | | 4 |
| 8238 (Rheotanytarsus) | 3 | | 3 |
| 9278 (Polypedilum (Tripodura) halterale-simulans grp) | 1 | | |
| 9238 (Polypedilum (Uresipedilum) flavum) | 2 | | |

Residuals

| Identifier | Date | Count | %PSE |
|------------|-----------|-------|------|
| SEZ | 9/16/2019 | 13 | 91.5 |



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| | | | | | | |
|--------------------|----------------|--------------------------|-----------------|----------------------|--------------------|----------------|
| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
| OML-05-0022 | 19T-003 | MHAB | AB38432 | 190813703 | 8/13/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Bobs Cr | | CR 1300 N | | 050902030502 | | 05090203060060 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4347624.12 | 651728.46 | 55 | 4.948 | 9.177 | 41 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| 1087 (Ferrissia) | 1 | | 6 |
| 1090 (Physa) | 1 | | 8 |
| 2156 (Corbicula fluminea) | 11 | | 6 |
| 1092 (SPHAERIIDAE) | 10 | | 8 |
| 2181 (Sphaerium) | 4 | | 6 |
| 1083 (ACARI) | 1 | | 4 |
| 9050 (Hyalella) | 10 | | |
| 9016 (Orconectes sloanii) | 3 | 1F; 2M Form II | |
| 9361 (Caenis dimunata grp.) | 59 | | |
| 7026 (Calopteryx maculata) | 1 | | |
| 1026 (COENAGRIONIDAE) | 1 | early instar (3 antennal segments) | 9 |
| 7031 (Ischnura verticalis) | 3 | | |
| 3546 (Enallagma) | 12 | 8 no gills; 4 early instars | 9 |
| 7183 (Palmaecorixa) | 1 | female | 5 |
| 7111 (Rheumatobates) | 1 | 1F | |
| 7117 (Trepobates) | 5 | nymphs | |
| 7121 (Trepobates subnitidus) | 4 | 2F; 2M | |
| 7123 (Microvelia americana) | 2 | 1F; 1M | |
| 3872 (Tropisternus) | 1 | L | |
| 1096 (SCIRTIDAE) | 5 | larvae | 5 |
| 7307 (Stenelmis) | 2 | L | 5 |
| 7317 (Stenelmis sexlineata) | 1 | Adult | |
| 7296 (Dubiraphia) | 6 | 6L | 5 |
| 7300 (Dubiraphia vittata) | 36 | Slide S19-025.1 (penis length = 245 µm); Slide S19-025.2 (penis length = 250 µm); Slide S19-025.3 (penis length = 265 µm); Slide S19-025.4 (penis length = 260 µm); Adults (27M and 9F) | |
| 3432 (Cheumatopsyche) | 1 | | 3 |
| 9369 (Bezzia grp.) | 7 | | 7 |
| 7929 (Clinotanypus pinguis) | 1 | | 8 |
| 7984 (Procladius) | 15 | Slide Mounted Specimens: Slides S19-026 | 7 |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 40 | 3 |
| Total No. Individuals: | 238 | 3 |
| EPT Taxa: | 2 | 1 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 8.16 | 5 |
| % Non-insects excluding Astacidae: | 15.97 | 5 |
| Diptera Taxa: | 15 | 5 |
| % Intolerant (0-3): | 0.84 | 1 |
| % Tolerant (8-10): | 10.5 | 5 |
| % Predators FFG 1: | 21.85 | 3 |
| % Shredders + Scrapers FFG 1: | 4.2 | 1 |
| % Collector-Filterers FFG 1: | 11.76 | 3 |
| % Sprawlers: | 7.98 | 5 |
| mIBI Metric Score: | | 40 |

Supplemental Metrics

| | HBI | |
|----------------------|------|-------|
| | 6.53 | |
| Shannon-Weaver Index | | 2.88 |
| Shannon Equitability | | 0.78 |
| % Dominant 3 Taxon | | 46.22 |
| % Chironomidae | | 20.59 |



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| TAXON | COUNT | NOTES | HBI Tolerance |
|-------------------------------------------------------|-------|-----------------|---------------|
| | | through S19-031 | |
| 8083 (Chironomini (Tribe)) | 2 | | |
| 9248 (Ablabesmyia (Ablabesmyia) mallochi grp.) | 1 | | |
| 8099 (Cryptochironomus) | 3 | | 5 |
| 8104 (Cryptotendipes) | 2 | | 4 |
| 8112 (Dicrotendipes) | 7 | | 6 |
| 8126 (Glyptotendipes) | 1 | | 6 |
| 8172 (Phaenopsectra) | 1 | | 7 |
| 8228 (Cladotanytarsus) | 2 | | 4 |
| 9093 (Stempellinella) | 1 | | 3 |
| 8241 (Tanytarsus) | 1 | | 4 |
| 9278 (Polypedilum (Tripodura) halterale-simulans grp) | 8 | | |
| 9241 (Polypedilum (Polypedilum) illinoense grp.) | 4 | | |

Residuals

| Identifier | Date | Count | %PSE |
|------------|-----------|-------|-------|
| SEZ | 9/26/2019 | 3 | 98.74 |



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| | | | | | | |
|----------------|-----------|-------------------|----------|---------------|-------------|----------------|
| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
| OML-05-0012 | 19T-021 | MHAB | AB38439 | 190812606 | 8/12/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Laughery Creek | | CR 450 N | | 050902030507 | | 05090203060140 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4333778.61 | 651273.79 | 55 | 3.481 | 142.604 | 54 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|-------------------------------------|-------|---------------------------------------------------------|---------------|
| 1206 (PLANORBIDAE) | 1 | small (< 1mm) | 6 |
| 2211 (Pleurocera) | 1 | | |
| 1251 (ISOTOMIDAE) | 1 | | |
| 3020 (Stenonema femoratum) | 3 | | 3 |
| 3365 (Proclaeon) | 2 | Slide S19-101.3 and S19-101.4 | |
| 9361 (Caenis dimunata grp.) | 6 | | |
| 3197 (Ephemera) | 1 | immature larva | 3 |
| 3206 (Hexagenia limbata) | 1 | | 3 |
| 3245 (Boyeria vinosa) | 3 | | 4 |
| 3248 (Basiaeschna janata) | 1 | | 6 |
| 1021 (GOMPHIDAE) | 1 | small instar (~3.5 mm long) | 1 |
| 3099 (Hagenius brevistylus) | 1 | | 1 |
| 3546 (Enallagma) | 21 | 5 no gills; 16 with no distinct gill patterns | 9 |
| 7032 (Argia moesta) | 1 | | |
| 7230 (Neoplea striola) | 1 | | |
| 7113 (Rheumatobates rileyi) | 1 | adult (1M) | |
| 7117 (Trepobates) | 3 | nymphs | |
| 3600 (Peltodytes duodecimpunctatus) | 1 | adult | |
| 3959 (Helichus lithophilus) | 1 | adult | |
| 7317 (Stenelmis sexlineata) | 1 | adult | |
| 9266 (Stenelmis grossa) | 1 | Slide S19-101.2; adult (1M) | |
| 7296 (Dubiraphia) | 2 | 2 larvae | 5 |
| 7300 (Dubiraphia vittata) | 5 | Slide S19-101.1 (penis length = 255 µm) adults (5M) | |
| 7295 (Ancyronyx variegatus) | 12 | adults | 4 |
| 7321 (Macronychus glabratus) | 2 | adults | 3 |
| 7984 (Procladius) | 5 | Specimen S19-104.1 interesting | 7 |
| 9153 (Tribelos) | 2 | | 5 |
| 8083 (Chironomini (Tribe)) | 4 | Larvae: 3; Pupa: 1 | |
| 9284 (Tribelos jucundus) | 21 | Slide Mounted Specimens: Slides S19-102 through S19-105 | |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 35 | 3 |
| Total No. Individuals: | 116 | 1 |
| EPT Taxa: | 5 | 1 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 11.9 | 5 |
| % Non-insects excluding Astacidae: | 1.72 | 5 |
| Diptera Taxa: | 10 | 3 |
| % Intolerant (0-3): | 7.76 | 1 |
| % Tolerant (8-10): | 20.69 | 3 |
| % Predators FFG 1: | 30.17 | 3 |
| % Shredders + Scrapers FFG 1: | 0.86 | 1 |
| % Collector-Filterers FFG 1: | 1.72 | 5 |
| % Sprawlers: | 4.31 | 3 |
| mIBI Metric Score: | | 34 |

Supplemental Metrics

| | HBI | |
|----------------------|-----|-------|
| | HBI | 5.98 |
| Shannon-Weaver Index | | 2.93 |
| Shannon Equitability | | 0.82 |
| % Dominant 3 Taxon | | 46.55 |
| % Chironomidae | | 36.21 |



OWQ/WAPB Macroinvertebrate Community Assessment
MHAB Report

| TAXON | COUNT | NOTES | HBI Tolerance |
|------------------------|-------|-------|------------------|
| 8086 (Chironomus) | 3 | | 8 |
| 8112 (Dicrotendipes) | 1 | | 6 |
| 8126 (Glyptotendipes) | 1 | | 6 |
| 8228 (Cladotanytarsus) | 2 | | 4 |
| 8235 (Paratanytarsus) | 2 | | 4 |
| 8241 (Tanytarsus) | 1 | | 4 |

Residuals

| Identifier | Date | Count | %PSE |
|------------|------|-------|------|
|------------|------|-------|------|



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|-----------------------|-----------|-----------------------|----------|---------------|-------------|----------------|
| OML-05-0023 | 19T-004 | MHAB | AB38431 | 190813704 | 8/13/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Little Laughery Creek | | CR 1250 N/Legion Road | | 050902030502 | | 05090203060060 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4346184.48 | 651810.39 | 55 | 4.625 | 25.228 | 52 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|-------------------------------------------------------|-------|---------------------------------------------------------------|---------------|
| 1090 (Physa) | 3 | | 8 |
| 8996 (Orconectes) | 1 | M Form II; Likely O. sloanii | 4 |
| 3365 (Procloeon) | 2 | Slide S19-090.2 | |
| 9361 (Caenis dimunata grp.) | 14 | | |
| 3546 (Enallagma) | 1 | small instar | 9 |
| 3568 (Argia) | 6 | 3 no gills; 3 indistinct gill patterns (possibly A. tibialis) | 5 |
| 3572 (Argia tibialis) | 4 | | |
| 7117 (Trepobates) | 2 | nymphs | |
| 3863 (Paracymus) | 1 | adult | |
| 3909 (Helochaers) | 1 | larva | 5 |
| 7317 (Stenelmis sexlineata) | 1 | adults | |
| 7300 (Dubiraphia vittata) | 2 | adults (2M); Slide S19-090.1 (penis length = 265 µm) | |
| 7295 (Ancyronyx variegatus) | 4 | adults | 4 |
| 7732 (Anopheles) | 1 | | |
| 1077 (CERATOPOGONIDAE) | 1 | pupa | 6 |
| 9369 (Bezzia grp.) | 1 | | 7 |
| 7926 (Tanypodinae (Subfamily)) | 1 | pupa | |
| 8083 (Chironomini (Tribe)) | 1 | | |
| 8086 (Chironomus) | 2 | | 8 |
| 8099 (Cryptochironomus) | 4 | | 5 |
| 8112 (Dicrotendipes) | 2 | | 6 |
| 8211 (Stictochironomus) | 1 | | 4 |
| 8228 (Cladotanytarsus) | 1 | | 4 |
| 8235 (Paratanytarsus) | 1 | | 4 |
| 9278 (Polypedilum (Tripodura) halterale-simulans grp) | 2 | | |
| 9241 (Polypedilum (Polypedilum) illinoense grp.) | 4 | Slide Mounted Specimens: Slides S19-091 and S19-092 | |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 26 | 3 |
| Total No. Individuals: | 64 | 1 |
| EPT Taxa: | 2 | 1 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 10.53 | 5 |
| % Non-insects excluding Astacidae: | 4.69 | 5 |
| Diptera Taxa: | 13 | 3 |
| % Intolerant (0-3): | 0 | 1 |
| % Tolerant (8-10): | 9.38 | 5 |
| % Predators FFG 1: | 32.81 | 3 |
| % Shredders + Scrapers FFG 1: | 4.69 | 1 |
| % Collector-Filterers FFG 1: | 1.56 | 5 |
| % Sprawlers: | 7.81 | 5 |
| mIBI Metric Score: | | 38 |

Supplemental Metrics

| | HBI | |
|----------------------|------|-------|
| | 5.55 | |
| Shannon-Weaver Index | | 2.89 |
| Shannon Equitability | | 0.89 |
| % Dominant 3 Taxon | | 37.5 |
| % Chironomidae | | 29.69 |

Residuals

| Identifier | Date | Count | %PSE |
|------------|------|-------|------|
|------------|------|-------|------|



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
|-------------|---------|-------------------|----------|---------------|-------------|--------|
| OML-05-0042 | 19T-019 | MHAB | AB38428 | 190813602 | 8/13/19 | Ripley |

| Stream Name | Location | HUC 12 | HUOTO14 |
|----------------|-----------------------------|--------------|----------------|
| Laughery Creek | SR 350, Osgood Water Intake | 050902030506 | 05090203060110 |

| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score |
|------------|-----------|-----------|----------|---------------|------------|
| 4334846.88 | 650898.75 | 55 | 3.481 | 126.043 | 54 |

| TAXON | COUNT | NOTES | HBI Tolerance |
|-------------------------------------------------------|-------|----------------------------------------------------------|------------------|
| 2156 (Corbicula fluminea) | 1 | | 6 |
| 1083 (ACARI) | 1 | | 4 |
| 9068 (Gammarus) | 1 | | 6 |
| 3020 (Stenonema femoratum) | 4 | | 3 |
| 9361 (Caenis diminuta grp.) | 2 | | |
| 3248 (Basiaeschna janata) | 1 | | 6 |
| 3540 (Ischnura) | 1 | no gills | 9 |
| 3546 (Enallagma) | 13 | 6 no gills; 7 indistinct gill patterns | 9 |
| 3549 (Enallagma divagans) | 6 | | |
| 3568 (Argia) | 2 | gill patterns indistinct | 5 |
| 7111 (Rheumatobates) | 1 | nymph | |
| 7117 (Trepobates) | 1 | missing antennae; nymph | |
| 7118 (Trepobates inermis) | 1 | adult (1M) | |
| 1096 (SCIRTIDAE) | 5 | larvae | 5 |
| 3959 (Helichus lithophilus) | 2 | adults | |
| 7293 (Psephenus herricki) | 1 | larva | 4 |
| 7317 (Stenelmis sexlineata) | 8 | adults (6M; 2F) | |
| 9266 (Stenelmis grossa) | 4 | adults; Slide S19-93.1 (3M, 1F) | |
| 7300 (Dubiraphia vittata) | 5 | adults (3F, 2M); Slide S19-093.2 (penis length = 245 µm) | |
| 7295 (Ancyronyx variegatus) | 10 | adults | 4 |
| 3432 (Cheumatopsyche) | 1 | | 3 |
| 7984 (Procladius) | 5 | Slide Mounted Specimens: Slides S19-094 through S19-096 | 7 |
| 9153 (Tribelos) | 1 | | 5 |
| 9284 (Tribelos jucundus) | 4 | | |
| 8099 (Cryptochironomus) | 1 | | 5 |
| 8123 (Endochironomus) | 5 | | 6 |
| 8126 (Glyptotendipes) | 3 | | 6 |
| 8228 (Cladotanytarsus) | 2 | | 4 |
| 8241 (Tanytarsus) | 5 | Larvae: 4; Pupa: 1 | 4 |
| 9278 (Polypedilum (Tripodura) halterale-simulans grp) | 2 | | |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|-----------------|
| Total Taxa: | 31 | 3 |
| Total No. Individuals: | 101 | 1 |
| EPT Taxa: | 3 | 1 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 23.33 | 5 |
| % Non-insects excluding Astacidae: | 2.97 | 5 |
| Diptera Taxa: | 10 | 3 |
| % Intolerant (0-3): | 4.95 | 1 |
| % Tolerant (8-10): | 13.86 | 3 |
| % Predators FFG 1: | 30.69 | 3 |
| % Shredders + Scrapers FFG 1: | 10.89 | 3 |
| % Collector-Filterers FFG 1: | 9.9 | 5 |
| % Sprawlers: | 5.94 | 3 |
| mIBI Metric Score: | | 36 |

Supplemental Metrics

| | HBI | Value |
|----------------------|-----|-------|
| | HBI | 5.76 |
| Shannon-Weaver Index | | 3.11 |
| Shannon Equitability | | 0.91 |
| % Dominant 3 Taxon | | 30.69 |
| % Chironomidae | | 29.7 |



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| TAXON | COUNT | NOTES | HBI Tolerance |
|-----------------------------------------------------|-------|-------|------------------|
| 9241 (Polypedilum (Polypedilum) illinoense grp.) | 2 | | |

Residuals

| Identifier | Date | Count | %PSE |
|------------|------|-------|------|
|------------|------|-------|------|



OWQ/WAPB Macroinvertebrate Community Assessment MHAB Report

| | | | | | | |
|--------------------|----------------|--------------------------|-----------------|----------------------|--------------------|----------------|
| Site Name | EPA ID | Macro Sample Type | Sample # | Macro Event # | Sample Date | County |
| OML-05-0033 | 19T-018 | MHAB | AB38441 | 190813601 | 8/13/19 | Ripley |
| Stream Name | | Location | | HUC 12 | | HUCTO14 |
| Plum Creek | | SR 350 | | 050902030506 | | 05090203060120 |
| Northing | Easting | Ecoregion | Gradient | Drainage Area | QHEI Score | |
| 4334602.27 | 650695.99 | 55 | 13.897 | 8.732 | 70 | |

| TAXON | COUNT | NOTES | HBI Tolerance |
|----------------------------------------|-------|---------------------------------|---------------|
| 1083 (ACARI) | 5 | | 4 |
| 8996 (Orconectes) | 1 | O. juvenilis or O. rusticus | 4 |
| 1251 (ISOTOMIDAE) | 2 | | |
| 3020 (Stenonema femoratum) | 2 | | 3 |
| 3049 (Stenacron interpunctatum) | 1 | Slide R19-008.2 and R19-008.3 | 7 |
| 3066 (Baetis intercalaris) | 8 | Slide R19-008.4 | 3 |
| 3230 (Aeshna umbrosa) | 2 | | |
| 7026 (Calopteryx maculata) | 3 | | |
| 3540 (Ischnura) | 1 | | 9 |
| 3546 (Enallagma) | 1 | | 9 |
| 3549 (Enallagma divagans) | 1 | | |
| 7122 (Microvelia) | 4 | Immature | |
| 3873 (T. lateralis nimbatus) | 1 | | |
| 3887 (E. pygmaeus nebulosus) | 1 | | |
| 7293 (Psephenus herricki) | 12 | 5 Adult, 7 Larvae | 4 |
| 7309 (Stenelmis crenata) | 5 | 3 Male 2 Female Slide R19-008.1 | 5 |
| 7317 (Stenelmis sexlineata) | 2 | 2A | |
| 7296 (Dubiraphia) | 4 | 4 Female | 5 |
| 7321 (Macronychus glabratus) | 1 | Adult | 3 |
| 3267 (Chimarra obscura) | 8 | | 4 |
| 3003 (Chimarra aterrima) | 10 | | 2 |
| 3432 (Cheumatopsyche) | 4 | | 3 |
| 9319 (Ceratopsyche "checkerboard" grp) | 1 | | |
| 9143 (Triaenodes perna) | 1 | | |
| 7814 (Simulium) | 8 | | 5 |
| 7926 (Tanypodinae (Subfamily)) | 1 | | |
| 8083 (Chironomini (Tribe)) | 1 | | |
| 9316 (Phaenopsectra obediens grp.) | 1 | | |
| 8112 (Dicrotendipes) | 2 | | 6 |
| 9296 (Microtendipes pedellus grp) | 1 | | |
| 9335 (Paratendipes albimanus grp) | 1 | | |
| 8228 (Cladotanytarsus) | 1 | | 4 |
| 8274 (Stratiomys) | 1 | | |

| Type | Value | Metric Score |
|-------------------------------------------------|-------|--------------|
| Total Taxa: | 33 | 3 |
| Total No. Individuals: | 98 | 1 |
| EPT Taxa: | 8 | 5 |
| % Orthocladiinae + Tanytarsini of Chironomidae: | 12.5 | 5 |
| % Non-insects excluding Astacidae: | 5.1 | 5 |
| Diptera Taxa: | 9 | 3 |
| % Intolerant (0-3): | 25.51 | 3 |
| % Tolerant (8-10): | 2.04 | 5 |
| % Predators FFG 1: | 11.22 | 1 |
| % Shredders + Scrapers FFG 1: | 17.35 | 3 |
| % Collector-Filterers FFG 1: | 31.63 | 1 |
| % Sprawlers: | 1.02 | 1 |
| mIBI Metric Score: | | 36 |

Supplemental Metrics

| | HBI | Score |
|----------------------|-----|-------|
| | HBI | 3.99 |
| Shannon-Weaver Index | | 3.1 |
| Shannon Equitability | | 0.89 |
| % Dominant 3 Taxon | | 30.61 |
| % Chironomidae | | 8.16 |

Residuals



OWQ/WAPB Macroinvertebrate Community Assessment
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| Identifier | Date | Count | %PSE |
|------------|-----------|-------|-------|
| RAC | 11/7/2019 | 3 | 96.94 |