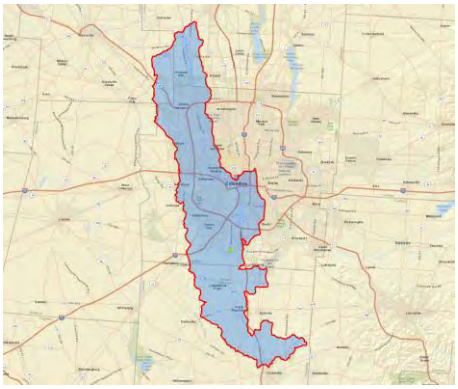
Integrating Wetland Assessment into Ohio EPA's TMDL Process

Part 1: Wetland assessment of the Middle Scioto



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Integrating Wetland Assessment into Ohio EPA's TMDL Process

Part 1: Wetland Assessment of the Middle Scioto

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Executive Summary

A probabilistic survey of wetland condition was conducted for a current Total Maximum Daily Load (TMDL) project in central Ohio. The Middle Scioto TMDL survey area encompasses two separate 10-digit hydrologic unit code (HUC10s) watersheds (Seaber, et al., 1987): Indian Run-Scioto River [0506000112] and Scioto Big Run-Scioto River [0506000123]. The Middle Scioto has an area of approximately 307 square miles and is predominantly composed of urban (48 percent) and agricultural land uses (43 percent) as defined by the 2006 National Land Cover Dataset (NLCD) (Fry et al., 2011). Only 8 percent of the area is composed of land uses considered to be "natural" (forest, wetland, open water, etc.).

A total of 50 randomly-selected National Wetland Inventory (NWI) wetlands were assessed as part of the study (US Fish and Wildlife Service, 2006-2007). The sample set of wetlands included in this analysis was generated by using a Generalized Random Tessellation Stratified (GRTS) survey design (Stevens and Olsen, 2004) on the entire database of NWI wetlands contained within the Middle Scioto TMDL area. In order to achieve the desired number of wetlands to evaluate, the sample draw included 50 base sites and 150 oversample sites to accommodate for wetlands that could not be included in the study for a variety of reasons (conversion to non-wetland habitat, mapping errors, landowner denial, etc.). The 50 wetlands meeting all necessary criteria for inclusion in the study were assessed using the Ohio Rapid Assessment Method for Wetlands (ORAM) (Mack, 2001). Additionally, a subset of 10 sites were selected to perform more detailed biological assessments using the Vegetation Index of Biotic Integrity (VIBI) to verify the condition scores generated using ORAM (Mack, 2007).

Analysis of NRCS hydric soils in the Middle Scioto TMDL area estimates that approximately 19.4 percent had historically been composed of wetland habitat (Soil Survey Staff, Natural Resources Conservation Service, Accessed 2009). Current NWI mapping indicates only 0.4 percent of the area is now mapped as emergent, forested or scrub-shrub wetland, representing a loss of 98 percent of these original wetlands. Based on the probabilistic survey of 50 of these remaining wetlands, the mean ORAM score was 40.6, placing the "average" wetland in the study area in fair condition. The complete breakdown of the 50 wetlands is as follows: 13 (26 percent) were rated as being in poor condition; 19 (38 percent) were rated as fair condition; 11 (22 percent) were good condition; and 7 (14 percent) were considered to be excellent condition. When compared to the Ohio EPA Wetland Ecology Group reference dataset, wetlands located within the Middle Scioto TMDL survey area appear to be skewed slightly to a lower ecological condition than what would be expected for a random selection of wetlands in Ohio.

Field assessment is the best approach for assigning an ecological condition score to a given wetland. However, in order to estimate condition of wetland resources on a broader geographic scale, detailed (Level 3) or even rapid (Level 2) field assessments are not always feasible due to the lack of adequate resources (time, money, personnel, etc.). For these reasons a Level 1 wetland condition tool was developed as part of this study to allow Ohio EPA staff to evaluate the state of wetlands across Ohio

by assigning a condition score to each of the approximately 135,000 emergent, forested and scrub-shrub NWI wetlands mapped for the state. This Level 1 tool was developed by comparing results of detailed vegetation surveys (conducted at 298 natural wetlands in Ohio) to a wide variety of landscape-scale parameters. The parameters included in the analysis are all available as statewide datasets and can be easily quantified using GIS technology.

All wetlands previously assessed by Ohio EPA's Wetland Ecology Group using VIBI were evaluated. If enough geographic information existed, a digital GIS boundary was created for each of these vegetation plot assessment areas. A total of 23 parameters were calculated for two separate areas surrounding each of these wetland assessment areas: from the edge of the vegetation plot to a distance of 100 meters ("inner buffer zone") and from 100 meters to a distance of 350 meters away from the assessment area ("outer buffer zone"). Each of these parameters were then compared to scores that had been calculated for each wetland using ORAM, VIBI and a new, simplified vegetation methodology ("VIBI-FQ"), which is currently in draft form and being reviewed for possible inclusion as an additional assessment tool in the 401 regulatory program.

The ten parameters showing the strongest statistical relationship to field assessment results were chosen to be used as individual metrics for the Level 1 tool. The 10 parameters are as follows:

1) Landscape Development Intensity (LDI) Index score for the 1992 National Land Cover Dataset (NLCD).
2) LDI score for the 2006 NLCD.
3) Percent impervious surface (ancillary data layer from 2006 NLCD).
4) Percent forest cover (ancillary data layer from 2001 NLCD).
5) Percent "historic" forest, as illustrated on digital USGS topographic maps (Digital Raster Graphics, or DRGs).
6) Natural land uses minus human-influenced land uses for the 1992 NLCD dataset.
7) Natural land uses minus human-influenced land uses for the 2006 NLCD dataset.
8) Population density from 1990 US Census Bureau data.
9) Population density from 2010 US Census Bureau data.
10) Density of rare plant species, as defined by the ODNR Natural Heritage database, and/or presence of sand or muck soils, as defined by NRCS SSURGO soils mapping.

Each metric has a maximum value of 10 points, with individual metric scores of 0, 3, 7 and 10 being established based on the quartile distribution of each parameter for the reference wetland dataset sites. Summing the 10 metrics for the two buffer zones generates a score between 0 and 100 for each. A final Level 1 score is calculated by combining the inner and outer zone scores, giving twice as much "weight" to the inner zone.

The Level 1 scores generated for each of the 298 natural wetlands were then compared to ORAM, VIBI and VIBI-FQ scores. A strong statistical relationship was found to be present between the Level 1 score and each of the field assessment techniques (ORAM: $p = 0.000$, $R^2 = 37.8$ percent; VIBI: $p = 0.000$, $R^2 = 31.1$ percent; VIBI-FQ: $p = 0.000$, $R^2 = 33.2$ percent).

A Level 1 score was then developed for the entire NWI dataset for Ohio, providing an estimate of ecological condition for each individual mapped wetland. These data were then used to determine an area-weighted wetland condition for each of the HUC12 watersheds in Ohio. A relative area was calculated for each NWI wetland located within a given watershed, which was then multiplied by its Level 1 condition score. These were then summed for each of the HUC12 watersheds to generate the final area-weighted Level 1 score. A summary table of all HUC12 watersheds in Ohio was then generated, with information on existing wetland area, historic wetlands, wetland loss, and the area-weighted Level 1 wetland condition. For those HUC12 watersheds in which Ohio EPA has performed field investigations of one or more wetlands, information on the number of wetlands evaluated as

well as the mean scores for ORAM, VIBI, and/or VIBI-FQ are also included. A final analysis included in this report compared Level 2 (ORAM) and Level 3 (VIBI and VIBI-FQ) ecological condition scores (for HUC12 watersheds having had at least 2 field assessments completed) with the Level 1 area-weighted condition score for the same watersheds. A strong statistical relationship was demonstrated between each of these more robust field assessment procedures and the landscape level, GIS-generated level 1 score (ORAM: $p = 0.000$, $R^2 = 32.5$ percent; VIBI: $p = 0.000$, $R^2 = 34.8$; VIBI-FQ: $p = 0.000$, $R^2 = 30.3$ percent).

Introduction

Over the last 20 years, Ohio EPA's Wetland Ecology Group (WEG) has conducted numerous studies on natural and mitigation wetlands throughout Ohio. These include detailed assessments of urban wetlands (Gamble, et al., 2007; Mack and Micacchion, 2007; Micacchion and Gara, 2008), performance of mitigation banks (Mack and Micacchion, 2006) and individual mitigation sites (Micacchion et al., 2010), and the development of a GIS tool to identify potential high quality vernal pool restoration sites (Gara and Micacchion, 2010). In 2006, a survey of the Cuyahoga River watershed in northeast Ohio was conducted to evaluate the ecological condition of wetlands. A total of 243 sites were assessed using the Ohio Rapid Assessment Method for wetlands (ORAM) (Mack, 2001) to characterize the overall condition of the wetlands within this drainage basin (Fennesey, et al., 2007).

The study of the Middle Scioto TMDL study area contained in this report was intended to build on this previous research by using a probabilistic survey design to develop a "scorecard" of the ecological condition of the wetlands located within this broad geographic area. Fifty wetlands were selected and ORAM evaluations were conducted on each. Additionally, a subset of 10 wetlands were also selected, in which a more detailed biological investigation of the plant community was performed. It is intended that this information will serve as a starting point for future watershed-level investigations of wetlands in Ohio.

Ohio EPA has a robust survey methodology for assessing the health of rivers and streams throughout the state, by evaluating habitat (Rankin, 2006) and biological associations (Yoder, 1991). Detailed surveys are conducted within Ohio's watersheds on a rotating basin schedule, with return visits occurring approximately every 10-15 years, depending on staff resources. These surveys provide the critical research for determining which watersheds are impaired and need to be studied within the context of the Total Maximum Daily Load (TMDL) program (Ohio EPA, 2012).

This grant research is intended to provide an example for incorporating wetland surveys into the TMDL process. As with the Ohio EPA stream program, the WEG has developed a suite of ecological assessment tools that are a critical element in Ohio's 401 water quality certification and isolated wetland permit programs. ORAM is a rapid (Level 2) assessment tool that used to determine the appropriate antidegradation category for wetlands being impacted through a permitted development activity (Mack, 2001). The Vegetation Index of Biotic Integrity (VIBI) and Amphibian Index of Biotic Integrity (AmphIBI) are detailed (Level 3) assessments of biological communities that require considerably more time and expertise to conduct than ORAM (Mack, 2007; Micacchion, 2011). These tools are frequently used to monitor wetland creation and restoration projects normally associated with compensatory mitigation sites in Ohio.

The development of a desktop (Level 1) assessment tool would allow Ohio EPA and the public at-large to predict wetland condition remotely, based on landscape-level GIS data. Due to the coarseness of the information contained in the GIS datasets, as well as errors inherent in any remotely-sensed information the development of a Level 1 tool will not supersede, or obviate, the need for Level 2 and Level 3 field investigations to accurately evaluate the ecological condition of an individual wetland within the context of the 401 or isolated wetland permit programs. A Level 1 tool would, however, be useful for planning purposes when investigating options for minimization of wetland impacts associated with large-scale development projects. It would also allow for the assessment of wetland resources over a much larger geographic area as a means to characterize watersheds relative to one another. Periodic field surveys could then be conducted regularly on a sample of watersheds to verify the validity of the Level 1 tool. As part of this project, the WEG developed a Level 1 tool as a first step toward assessing Ohio's wetlands within each HUC12 watershed for inclusion in the Ohio EPA Integrated Water Quality Report, which documents the condition of Ohio's water resources on a biennial basis.

Methods

Overview of Middle Scioto TMDL Survey Area

Two separate 10-digit hydrologic unit code (HUC10) watersheds define the outer boundary of the Middle Scioto TDML study area: Indian Run-Scioto River [0506000112] and Scioto Big Run-Scioto River [0506000123]. These watersheds are located in central Ohio, running from southern Delaware and Union Counties, along the west side of the Columbus metropolitan area, and extending south to Circleville in Pickaway County (Figure 1). A vast majority of the TMDL area is heavily modified from development activities. The Middle Scioto is located entirely within the Eastern Corn Belt Plains Ecoregion (Omernik, 1987) and has an area of approximately 307 square miles. It is predominantly composed of urban (48 percent) and agricultural land uses (43 percent) based on the 2006 National Land Cover Dataset (NLCD) (Fry et al., 2011). Only 8 percent of the area is composed of land uses not predominantly influenced by human activity (forest, wetland, open water, etc.) (Figure 2).

Wetland Assessment Methods

Wetland Sample Selection

Wetlands to be included in Middle Scioto TMDL study were selected from the database of National Wetland Inventory (NWI, 2006-2007) wetland polygons contained within the two HUC10 watersheds which define the study area: Indian Run-Scioto River [0506000112] and Scioto Big Run-Scioto River [0506000123]. Mapped wetland polygons less than 0.1 acre in size were precluded from the initial evaluation. This reduced the total number of potential sites from 671 to 617 separate emergent (N=401), forested (N=191) and scrub-shrub (N=25) wetlands (Figure 3). A Generalized Random Tessellation Stratified (GRTS) survey design was run to select a subset of sites for inclusion in the study (Stevens and Olsen, 2004). This procedure selects a proportional number of sites in each of the three wetland types, based on the total number of emergent, forested and scrub-shrub wetlands present in the TMDL area. In order to ensure enough

wetlands were included to account for sites that would need to be dropped from the study due to mapping errors, wetland conversion, landowner resistance, etc. a total of 50 base sites and 150 oversample sites were selected using the GRTS survey design. The first 50 wetlands on the list that met all necessary criteria and could be successfully accessed by the WEG were the sites included in the final ecological condition analysis for the Middle Scioto TMDL area (Figure 4).

Ecological Condition Assessment

Each of the 50 wetlands were assessed using the Ohio Rapid Assessment for Wetlands (ORAM) version 5.0 (Mack, 2001). ORAM is a rapid assessment that evaluates the ecological condition of a wetland using field survey data collected via visual observation of various environmental factors. Scores range from 0 to 100, with low scores indicating poor ecological condition, and high scores assigned to wetlands in excellent condition. Additionally, in order to verify the results obtained using ORAM, a more detailed biological survey was conducted on a subset of 10 sites using the Vegetation Index of Biotic Integrity (VIBI) (Mack, 2007). The VIBI is a Level 3 analysis that requires a detailed knowledge of the plant community and can take several hours of field work to conduct. A total of 10 metrics are scored depending on the type of plant community present, and as with ORAM, the higher the VIBI score generated, the better the ecological condition of the wetland. High ORAM and VIBI scores are typically indicative of wetlands relatively protected from human disturbance. Figure 3 illustrates the location for all ORAM and VIBI survey sites that were conducted within the Middle Scioto TMDL study area. Initial field work was done during the 2010 growing season (17 ORAMs, 10 VIBIs), within the remainder completed in the summer of 2012 (33 ORAMs).

Level 1 Assessment

A Level 1 desktop assessment tool was developed to predict ecological condition of mapped NWI wetlands, through the evaluation of a variety of landscape-level GIS data layers. All work related to the development of this Level 1 tool was conducted using ArcGIS 10.0 (Environmental Systems Research Institute, 2011). A total of 23 separate parameters were evaluated for inclusion as individual metrics in the Level 1 assessment tool. Each was compared to two separate buffer areas surrounding vegetation survey area boundaries for all natural wetlands in the Ohio EPA reference wetland database which had been previously assessed by the WEG using the VIBI (Figure 5). A standard VIBI plot measures 20 meters by 50 meters in size and generally represents an area smaller than the overall footprint of the wetland being monitored. In the rare instances that a wetland is too small to accommodate a standard VIBI plot, the plot configuration can be modified slightly when conducting a VIBI.

This represents a total of 298 wetlands which have a digital representation of the precise boundary of the survey area. The two buffers zones are: 1) from the edge of the vegetation plot boundary to a distance of 100 meters ("inner zone"), and 2) from the edge of the inner buffer zone to 350 meters ("outer zone"). The parameters selected to evaluate are as follows:

1) **Landscape Development Intensity (LDI) Index for the 1992 National Land Cover Dataset (NLCD) GIS layer.** LDI is a procedure for calculating a human disturbance gradient score for an area. The NLCD is a land use layer created using Landsat satellite data, in which each 30 meter x 30 meter pixel is assigned to one of several discreet land Anderson Level 2 land use categories (Vogelman, et al., 2001). Land use categories contained within the NLCD are assigned an LDI index score (Table 1), depending on the amount of energy required to maintain the level of disturbance associated with that particular land use (Brown and Vivas, 2005). LDI scores can range from 1.00 to 9.42, with the lowest scores associated with natural habitats, and higher scores indicating increasing levels of disturbance.
2) **Landscape Development Intensity (LDI) Index for the 2001 National Land Cover**

Dataset (NLCD) GIS layer (Homer, et al., 2004). Due to slight variations in categories contained within in the 2001 and 2006 NLCD layers, a separate table was created to assign LDI index scores to the various land use categories of each (Table 2).

3) **Landscape Development Intensity (LDI) Index for the 2006 National Land Cover Dataset (NLCD) GIS layer (Fry et al., 2011).**
4) **LDI Difference (2006-1992).** A simple subtraction of the LDI scores generated for both the inner and outer buffer zones was performed. The larger the ensuing score, the more change in land use (from natural to disturbed) has occurred during this time period.
5) **2001 Percent Impervious Surface.** This is an ancillary data layer created as part of the 2010 NLCD. Each Landsat 30M x 30M pixel is assigned a score indicating the estimated percent of the area that is composed of impervious surface (Yang et al., 2003).
6) **2006 Percent Impervious Surface (Xian et al., 2011).**
7) **Impervious Surface Difference (2006-2001).** A simple subtraction in impervious surface percent for the two time periods, with larger values indicating increases in amount of development that has occurred.
8) **2001 Percent Forest Canopy.** Ancillary data layer created as part of the NLCD. Each Landsat 30M x 30M pixel is assigned a score indicating the estimated percent of the area is composed of forest canopy (Huang et al., 2003).
9) **"Historic Forest" Canopy Percent within inner and outer buffer zones.** All green-colored areas were extracted from the USGS 7.5 minute topographic maps ("Digital Raster Graphics," or DRGs) as a separate GIS layer of "historic forest." This was the earliest source of forest cover information available as a statewide data layer that could be identified.
10) **Forest Change (2001 percent forest cover minus "historic forest" percent).** Simple subtraction of these two data layers to identify areas with large changes in forest canopy over the approximate 30-40 year timeframe.
11) **ODNR Natural Heritage Database rare plant density map (Ohio Division of Natural Areas and Preserves, 2008).** All records of endangered, threatened, potentially threatened and extirpated species occurring the August, 2008 version of this database was converted to a density map using ArcGIS 10.0 Spatial Analyst (Environmental Systems Research Institute, 2011). This density map was then combined with the inner and outer zones to identify "hot spots" surrounding wetland vegetation assessment areas that are higher in the incidence of rare plant species.
12) **Percent of mapped NWI wetlands within the inner and outer buffer zone areas.**
13) **"Historic Wetland" Percent.** The digital USGS topographic maps contain a symbol indicating larger, natural wetland areas. These marsh and swamp areas were digitized as part of an early GIS product created by the Ohio Geographically Referenced Information Program (OGRIP) in the 1990's (Ramirez, 1996).
14) **"Natural" Land Uses minus "Human Disturbance" Land Uses for 1992 NLCD data.** Each individual land use category was evaluated and assigned to either human disturbance dominated, natural, or unknown. Classes in which it was not possible to ascertain an obvious trend (e.g., water, grassland) as to whether these land uses had occurred naturally or due to some level of human disturbance were placed in the "unknown" category and not included in the analysis. For the remaining land uses, the cells of each type were summed together and human-dominated land uses were subtracted from natural land uses for each of the two buffer zones.
15) **"Natural" Land Uses minus "Human Disturbance" Land Uses for 2001 NLCD data.**
16) **"Natural" Land Uses minus "Human Disturbance" Land Uses for 2006 NLCD data.**

17) **Percent of area identified as parkland.** This analysis is based on areas mapped as parks focusing on conservation by the Ducks Unlimited Conservation and Recreation Lands (CARL) GIS layer (Ducks Unlimited, 2008).
18) **1990 population density estimate within inner and outer buffer zones (U.S. Census Bureau, 1990).**
19) **2000 population density estimate within inner and outer buffer zones (U.S. Census Bureau, 2000).**
20) **2010 population density estimate within inner and outer buffer zones (U.S. Census Bureau, 2010).**
21) **Difference between 2010 and 1990 population density estimates within inner and outer buffer zones.**
22) **Percent predominantly hydric soil areas located within inner and outer buffer zones.** NRCS SSURGO soils was analyzed and only soil polygons considered to have 50 percent or greater hydric inclusions were included in the analysis (Soil Survey Staff, NRCS, accessed 2009).
23) **Percent "Rare" Habitat Types.** This is a GIS layer that combines rare plant density data from the ODNR Natural Heritage database (Division of Natural Areas and Preserves, 2008) and muck or sandy soils from the NRCS SSURGO soils data (Soil Survey Staff, NRCS, accessed 2009). Summing information from both of these information sources is intended to identify sensitive habitats which have recorded rare species present and/or have a substrate typical of certain rare wetland ecosystems (bogs, fens, Oak Openings sand prairies).

Each of these 23 parameters were calculated for both the inner and outer buffer zones surrounding the vegetation plot boundaries. These parameter scores were then compared to field assessment data recorded for 298 natural wetlands in Ohio, using simple linear regressions modeling (Minitab 16 Statistical Software, 2010). The field assessments completed for these natural wetlands are ORAM, VIBI, and a new, simplified version of the VIBI which is currently in draft review, referred to as VIBI-FQ. The VIBI-FQ is considered a Level 3 assessment, as it requires a complete analysis of the species composition of the plant community. However, only two metrics are calculated, making the overall analysis and interpretation of the VIBI-FQ more straightforward than the traditional VIBI. Preliminary comparisons between the VIBI and VIBI-FQ show an extremely strong statistical correlation between the two approaches (Gara, 2013 [draft]). Since data collected during previous VIBI assessments also includes all necessary information for the VIBI-FQ, scores were back calculated for all wetland sites having VIBI data. This VIBI-FQ information has been included in the parameter/buffer zone comparisons for the development of the Level 1 tool. All statistical analysis completed for this report was done using Minitab 16 (Minitab 16 Statistical Software, 2010).

Results and Discussion

Wetland Field Assessments

A total of 200 wetlands were screened to generate the list of 50 sites to be included in this analysis (50 base sites and 150 oversample sites). Of the rejected sites, 75 (37.5 percent) were precluded as they had been converted to agriculture or some other use. Additionally, because of the way the GRTS model selected the sample set, duplicate points are possible. In this study, a total of 29 sites (14.5 percent) were excluded from the study because they were duplicates of already-included wetlands. The remaining 46 sites (23 percent) were eliminated from consideration due to landowner refusal or a lack of response to phone messages left requesting site access.

All wetland field assessments conducted in the Middle Scioto TMDL area were completed during the 2010 and 2012 growing seasons (Table 3). In order to validate scores obtained using the Level 2 ORAM analyses, a subset of 10 sites were selected to monitor using the VIBI, which is a much more detailed assessment of a wetland's plant community. This work was done using the traditional VIBI analysis (Mack, 2007). A VIBI-FQ score was also calculated from the data collected during VIBI monitoring. Comparing results of these detailed assessments with ORAM scores on the same wetlands yielded very similar results. Both the VIBI (Figure 6; $p=0.016$, $R^2=53.7$ percent) and the VIBI-FQ (Figure 7; $p=0.001$, $R^2=76.6$ percent) were strongly correlated to the rapid assessment results captured during the ORAM analysis. Consistency in the answer provided by the rapid Level 2 and detailed Level 3 assessments for these 10 sites validates the accuracy of the probabilistic survey of 50 wetlands using only ORAM.

For all 50 Middle Scioto TMDL area wetlands, the mean ORAM score was 40.6, placing the "average" wetland in the study area in fair condition. The complete breakdown of the 50 wetlands is as follows: 13 (26 percent) were rated as being in poor condition; 19 (38 percent) were rated as fair condition; 11 (22 percent) were good condition; and 7 (14 percent) were considered to be excellent condition. When compared to the Ohio EPA Wetland Ecology Group reference dataset of natural wetlands, the Middle Scioto TMDL wetlands appear to be skewed slightly to a lower ecological condition than what would be expected for a random selection of wetlands in Ohio (Figure 8). A Tukey's test comparing the mean ORAM scores for a set of 298 natural wetlands compared with the VIBI antidegradation category shows the strong relationship between ORAM and VIBI that is consistently obtained in various studies of wetlands in Ohio (e.g., Fennessy et al., 2007; Mack and Micacchion, 2007; Micacchion and Gara, 2008). When adding in the Middle Scioto TMDL study wetlands into the analysis (Figure 8), there is no statistically significant difference between the mean ORAM scores for natural wetlands falling in the category 1 range, and the mean ORAM score for wetlands assessed as part of this study. Conversely, the Middle Scioto TMDL mean ORAM score *was* different from natural wetlands scoring as category 2 or category 3 when using VIBI, and this difference was statistically significant based on the Tukey test.

Selection of Level 1 Metrics

A total of 23 landscape-level parameters were selected and calculated for two separate buffer zones (0 to 100 meters; 100 meters to 350 meters) surrounding the vegetation plot boundaries for 298 natural wetlands that had been previously assessed by the WEG using VIBI. In most cases, the plot was 20 meters by 50 meters in size, which represents 0.1 of a hectare (0.25 ac). In rare instances, alternate vegetation plot sizes were used, ranging from 0.02 hectares (0.05 ac) to 0.14 hectares (0.34 ac). Each of the 23 parameters was then individually compared to three separate field assessments conducted for the natural wetlands (ORAM, VIBI and VIBI-FQ) using a simple linear regression in Minitab. Results of each of these comparisons is summarized on Table 4. Individual scatterplots and regression analyses are included as Appendix 1. Most of the parameters tested for the two buffer areas showed at least a slight statistical correlation to one or more of the assessments.

A total of ten parameters were selected, with each showing a strong correlation to most, if not all, of the three field assessments, and for both the inner and outer buffer zones. Additionally, an attempt was made to choose an equal number of environmental factors illustrating both "historic" and "current" conditions surrounding each wetland. Since most available statewide GIS data layers have been developed in the last few decades, "historic" is a relative term meant to convey information related to the previous levels of disturbance present for as far back in time as the data is available. The reasoning was to try and choose geographic data that may provide clues related to the long-term stability of a wetland and its surrounding habitat, which is expected to be associated with resources in better ecological condition. For data layers that have been generated more than two times, such as the NLCD, which is available for 1992, 2001 and 2006, typically the oldest and most recent versions were included as metrics while the intermediate date was removed from consideration. The parameters selected which represent "historic" are:

1) Landscape Intensity Index (LDI) score for the 1992 National Land Cover Dataset (NLCD).
2) Percent "historic" forest, as illustrated on digital USGS topographic maps (Digital Raster Graphics, or DRGs).
3) Natural land uses minus human-influenced land uses for the 1992 NLCD dataset.
4) Population density from 1990 US Census Bureau data.
5) Density of rare plant species, as defined by the ODNR Natural Heritage database, and/or presence of sand or muck soils, as defined by NRCS SSURGO soils mapping.

Parameters representing current, or at least the most recent information are:

1) LDI score for the 2006 NLCD.
2) Percent impervious surface (ancillary data layer from 2006 NLCD).
3) Percent forest cover (ancillary data layer from 2001 NLCD).
4) Natural land uses minus human-influenced land uses for the 2006 NLCD dataset.
5) Population density from 2010 US Census Bureau data.

Although the relationship between any one of these parameters and the field assessments showed a considerable amount of scatter, or "noise," strong statistical correlations were evident with each. These correlations exist for each assessment (ORAM, VIBI and VIBI-FQ), and also for both the inner and outer buffer zones.

A metric score of 0, 3, 7 or 10 was assigned to each parameter, based on the quartile distribution of each for the 298 natural wetlands (Table 5). A Level 1 score was then calculated for both the inner and outer buffer zones by summing the 10 individual metric scores for each.

Comparison of Level 1 score to field assessment data

Field assessment results were compared to the Level 1 scores for both of these buffer zones to see which of the two areas had the strongest statistical relationship to ecological condition of the wetland. From these graphs for VIBI (Figures 9 and 10), VIBI-FQ (Figures 11 and 12) and ORAM (Figures 13 and 14), it is apparent that there is a clear correlation between all assessment techniques and the Level 1 scores generated for both the inner and outer zones (VIBI "inner zone:" p=0.000, R^2=29.2; VIBI "outer zone:" p=0.000, R^2= 28.0; VIBI-FQ "inner zone:" p=0.000, R^2=33.9; VIBI-FQ "outer zone:" p=0.000, R^2= 25.5 ; ORAM "inner zone:" p=0.000, R^2= 36.8; ORAM "outer zone:" p=0.000, R^2= 31.7). Additionally, the regression analysis for each of the assessments suggests that zone closest to the wetland assessment area has the greatest influence on the ecological condition of that location, based on the elevated R-squared value for the inner zone Level 1 scores. Therefore, to calculate a final score for each wetland assessment area, which incorporated Level 1 information for both buffer zones, greater weight was given to the 0 to 100 meter buffer Level 1 score. The final calculation is as follows:

Total Wetland Level 1 Score = (Inner Buffer Level 1 Score*0.67) + (Outer Buffer Level 1 Score*0.33)

Once the total Level 1 score was assigned to each of the 298 natural wetlands in the database, this score was compared to the field assessment scores for VIBI (Figure 15), VIBI-FQ (Figure 16) and ORAM (Figure 17). The positive statistical correlation is still evident, with ORAM showing the strongest relationship to the Level 1 scores (VIBI: p=0.000, R^2= 31.1; VIBI-FQ: p=0.000, R^2= 33.2; ORAM: p=0.000, R^2= 37.8).

The strong statistical relationship between previously-collected field assessment data and Level 1 information can also be illustrated with boxplots, in which the Level 1 scores for all 298 natural wetlands is divided into quartiles and compared to VIBI, VIBI-FQ and ORAM scores (Figures 18, 19 and 20, respectively). The mean VIBI score for each Level 1 quartile is different for the lowest three quartiles, based on a Tukey's comparison. There is no statistical difference between the mean VIBI scores for the third and fourth Level 1 quartile, however. This suggests that there may be a threshold level of human disturbance that may need to be crossed before a degradation in wetland ecological condition can be quantified. Once this threshold is reached, VIBI scores decline proportionally to increasing disturbance levels (Figure 18). A similar pattern exists for the VIBI-FQ data, except the mean VIBI-FQ scores are statistically different based on Tukey's comparison for all four Level 1 quartiles (Figure 19). ORAM data also demonstrates this pattern. As with VIBI data, mean ORAM scores are statistically different for each of the first three quartiles, but no difference exists between quartiles three and four (Figure 20).

HUC 12 Watershed Level 1 Assessment

In order to generate a wetland condition score for each HUC12 watershed in the state of Ohio, a Level 1 assessment was run for each mapped wetland, based on the most current GIS layer of wetland resources available: the National Wetland Inventory (NWI) layer (U.S. Fish and Wildlife Service, 2006-2007). The NWI has been updated for Ohio using recent high resolution digital orthophotography captured as part of the Ohio Statewide Imagery Program (OSIP, 2006-2007). The complete NWI layer for Ohio contains 313,390 polygons, which includes several types of water bodies that are generally not considered to be wetlands (e.g., rivers, streams, lakes, ponds, etc.). For this analysis, only NWI polygons classified as emergent, scrub-shrub or forested wetlands were included, which reduces the total number of polygons for Ohio that needed to be processed to 134,736. Each of these NWI wetlands was then converted to a center point to ensure that an interior part of each wetland, which would be the most likely to be protected from human disturbance, would represent the most central location for the analysis. This approach is expected to be the most conservative (i.e., generate the highest Level 1 score), and therefore most protective of each resource.

It is not the intention of Ohio EPA to have Level 1 assessments supersede the need to perform Level 2 and Level 3 field assessments when wetland impacts are proposed as part of a 401 or isolated wetland permit proposal. Rather, the Level 1 score is intended for use as a planning tool, such as when considering multiple corridors for large transportation projects, or when characterizing large watershed areas, as is the case with TMDL projects.

An inner (0 to 100 meters) and outer (100 to 350 meters) buffer was created surrounding the center point for each of the 134,736 NWI wetland polygons in Ohio. Level 1 parameter scores were generated for each of these mapped wetlands, and a final Level 1 score calculated using the previously discussed methodology. HUC12 wetland Level 1 assessment scores were then developed for each watershed by first determining the relative area of all NWI wetlands contained within each of these HUC12s. Relative area values were multiplied with the Level 1 scores and summed by HUC12 watershed to calculate an area-weighted Level 1 score for each. A total of five HUC12 watersheds had no mapped NWI wetlands present, and these were assigned a Level 1 score of "0."

Preliminary Level 1 scoring ranges were established to approximate the four wetland tiered aquatic life

uses previously proposed by Ohio EPA (Mack, 2004). These ranges are based on the quartile distribution of all NWI wetlands in Ohio, and are as follows:

A) "Limited Quality Wetland Habitat" (Category 1) = Level 1 scores from 0 to 29.
B) "Restorable Wetland Habitat" (Modified Category 2) = Level 1 scores from 29 to 42.
C) "Wetland Habitat" (Category 2) = Level 1 scores from 42 to 61.
D) "Superior Wetland Habitat" (Category 3) = Level 1 scores from 61 to 100.

The WEG will continue to re-evaluate these Level 1 ranges as more field assessment data on natural wetlands is collected.

Figure 21 depicts all 1,538 watersheds in Ohio based on the area-weighted Level 1 scores, color-coded by the proposed wetland tiered aquatic life use ranges described above.

The Middle Scioto TMDL area is composed of 11 individual HUC12 watersheds. The breakdown of area-weighted Level 1 scores for these watersheds is as follows: 6 scored as "limited quality wetland habitat" (category 1, or "poor" condition), 4 fell in the "restorable wetland habitat" (modified category 2, or "fair" condition) range and 1 scored as "wetland habitat" (category 2, or "good" condition). None of these 11 HUC12s scored in the "superior wetland habitat" (category 3, or "excellent" condition) range, based on the Level 1 assessment. The same 11 watersheds were summarized using field assessment data for the HUC12 watersheds in which a mean condition score was generated for each watershed having more than one ORAM conducted as part of this study. This eliminated two of the HUC12s, as only a single ORAM score had been completed in each, and this simply did not provide enough information to warrant assigning a watershed-level condition score. Of the remaining 9 HUC12 watersheds, 3 had a mean ORAM score placing them in the "limited quality wetland habitat" (category 1, or "poor" condition), 4 fell in the "restorable wetland habitat" (modified category 2, or "fair" condition) range and 2 scored as "wetland habitat" (category 2, or "good" condition). As with the Level 1 characterization, none of the HUC12s scored in the "superior wetland habitat" (category 3, or "excellent" condition) range. Comparing these results side by side, along with the breakdown of ORAM scores for the probabilistic assessment in of Middle Scioto wetlands shows a similar pattern, with a majority of the HUCs for both the Level 1 and Level 2 characterizations skewed toward lower ecological condition (Figure 22). The ORAM field assessments had a few sites (7 out of 50, 14 percent) scoring in the highest condition category ("Superior Wetland Habitat" [Category 3]), whereas the Level 1 and Level 2 watershed characterization had none. As all of these Middle Scioto assessments resulted in similar results, it is apparent that landscape-level watershed characterizations may be useful for studies of large geographic areas over time. However, it is also important to note that these coarse, GIS-based assessments do not replace the necessity of field-level assessments when needing to accurately determine the ecological condition of a particular wetland.

A final analysis was done to compare results of the Level 1 HUC12 watershed characterization with field assessment results (ORAM, VIBI and VIBI-FQ) obtained for natural wetlands in Ohio. Only HUC12 watersheds which had at least two field assessments conducted were included in this analysis. The comparison confirms that a significant statistical relationship exists between the Level 1 and Level 2/Level 3 HUC12 watershed characterizations. This relationship is consistent for VIBI (Figure 23; $p=0.000$, $R^2=34.8$), VIBI-FQ (Figure 24; $p=0.000$, $R^2=30.3$) and ORAM (Figure 25; $p=0.000$, $R^2=32.5$).

Inclusion of wetland information in the Biennial Water Quality Integrated Report

Ohio EPA's Integrated Report provides information on the overall condition of Ohio's water resources and also identifies those waters that are not currently meeting water quality goals (Ohio EPA, 2012). It fulfills the requirements under the Clean Water Act to report biennially on the current condition of Ohio's regulated waters (305(b) report), and to provide a list of impaired waters (303 (d) list). Even though wetlands are regulated as one of the

"Waters of the State," up to this point, Ohio has struggled to develop a strategy for including information on the condition of the state's wetland resources as part of the integrated reporting process. Given the sheer number of NWI mapped wetlands in Ohio (134,736), it is obviously not feasible to identify individual wetlands that are considered to be impaired as part of the 303(d) list. However, the Level 1 analysis documented in this study does provide a mechanism for estimating wetland condition on a watershed scale, by generating an area-weighted Level 1 score for each HUC12 watershed in the state. This information, along with data on estimates of overall quantities of historic and current wetland habitat, wetland loss, and field assessment data, where it exists, can be included as an overall characterization on the condition of wetlands within each watershed. An example of this information and how it is could be organized within the Integrated Report has been included as Appendix 2. The WEG also proposes that periodic Level 2 and Level 3 field assessments be conducted on a random selection of wetlands within targeted HUC12 watersheds on a rotating basin schedule, similar to what is currently being done with the Ohio EPA stream assessments. Issues such as property access and lack of staff resources will dictate the number of watersheds that can be surveyed, but as the number of HUC12s that have had field assessments conducted increases, a better understanding of the relationship between the Level 1 and Level 2/Level 3 characterizations will be illustrated. This understanding will be critical to the continued improvements to our ability to assess the ecological condition of wetlands using remotely-sensed, landscape-level GIS data. Future research will also focus on improved wetland mapping using the ever-increasing wealth of detailed GIS data, to enhance our ability to more accurately identify the type and extent of wetlands in Ohio.

Literature Cited

Brown, Mark T. and M. Benjamin Vivas. 2005. "A Landscape Development Intensity Index." *Environmental Monitoring and Assessment*, (volume 101 issue 1-3), pp. 289-309.

Ducks Unlimited. 2008. Conservation and Recreation Lands (CARL). www.ducks.org/Conservation/GLARO/3750.*GISCARL.html*.

Environmental Systems Research Institute. 2011. ArcGIS: Release 10.0 [software]. Redlands, California: Environmental Systems Research Institute.

Fennessy, M. S., J. J. Mack, E. Deimeke, M. T. Sullivan, J. Bishop, M. Cohen, M. Micacchion and M. Knapp. 2007. Assessment of Wetlands in the Cuyahoga River Watershed of Northeast Ohio. Ohio EPA Technical Report WET/2007-4. Ohio Environmental Protection Agency, Division of Surface Water, Wetland Ecology Group, Columbus, Ohio.

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. "Completion of the 2006 National Land Cover Database for the Conterminous United States," *PE&RS*, (Volume 77 Issue 9), pp. 858-864.

Gamble, D., E. Grody, J. Undercoffer, J. J. Mack, and M. Micacchion. 2007. An Ecological and Functional Assessment of Urban Wetlands in Central Ohio. Volume 2: Morphometric Surveys, Depth-area-volume Relationships and Flood Storage Function. Ohio EPA Technical Report WET/2007-3B. Ohio Environmental Protection Agency, Wetland Ecology Group, Division of Surface Water, Columbus, Ohio.

Gara, Brian. 2013. [DRAFT] The Vegetation Index of Biotic Integrity "Floristic Quality" (VIBI-FQ). Ohio EPA Technical Report WET/2013-2. Ohio Environmental Protection Agency, Wetland Ecology Group, Division of Surface Water, Columbus, Ohio.

Gara, B. D. and M. Micacchion. 2010. Assessment of wetland mitigation projects in Ohio. Volume 2: Developing a GIS-based Tool to Optimize Vernal Pool Wetland Mitigation Site Selection. Ohio EPA Technical Report WET/2010-1B. Ohio Environmental Protection Agency, Wetland Ecology Group, Division of Surface Water, Columbus, Ohio.

Homer, C. C. Huang, L. Yang, B. Wylie and M. Coan. 2004. "Development of a 2001 National Landcover Database for the United States." *Photogrammetric Engineering and Remote Sensing*, (Volume 70, Issue 7, July 2004), pp. 829-840.

Huang, C., Homer, C., and L. Yang. 2003, "*Regional Forest Land Cover Characterization Using Landsat Type Data*," in Wulder, M., and Franklin, S., eds., *Methods and Applications for Remote Sensing of Forests: Concepts and Case Studies*, Kluwer Academic Publishers, pp. 389-410.

Mack, John J. 2001. *Ohio Rapid Assessment Method for Wetlands v. 5.0, User's Manual and Scoring Forms.* Ohio EPA Technical Report WET/2001-1. Ohio Environmental Protection Agency, Wetland Ecology Group, Division of Surface Water, Columbus, Ohio.

Mack, John J. 2004. Integrated Wetland Assessment Program. Part 4: Vegetation Index of Biotic Integrity (VIBI) and Tiered Aquatic Life Uses (TALUs) for O hio wetlands. Ohio EPA Technical Report WET/2004-4. Ohio Environmental Protection Agency, W etland Ecology Group, Division of S urface Water, Columbus, Ohio.

Mack, John J. 2007. Integrated Wetland Assessment Program. Part 9: Field Manual for the Vegetation Index of Biotic Integrity for Wetlands v. 1.4. Ohio EPA Technical Report WET/2007-6. Ohio Environmental Protection Agency, Wetland Ecology Group, Division of Surface Water, Columbus, Ohio.

Mack, J.J and M. Micacchion. 2006. An Ecological Assessment of Ohio Mitigation Banks: Vegetation, Amphibians, Hydrology, and Soils. Ohio EPA Technical Report WET/2006-1. Ohio Environmental Protection Agency, Division of Surface Water, Wetland Ecology Group, Columbus, Ohio.

Mack, J.J. and M. Micacchion. 2007. *An Ecological and Functional Assessment of Urban Wetlands in Central Ohio. Volume 1: Condition of Urban Wetlands Using Rapid (Level 2) and Intensive (Level 3) Assessment Methods.* Ohio EPA Technical Report WET/2007-3A. Ohio Environmental Protection Agency, Wetland Ecology Group, Division of Surface Water, Columbus, Ohio.

Micacchion, Mick. 2011. Field Manual for the Amphibian Index of Biotic Integrity (AmphIBI) for Wetlands. Ohio EPA Technical Report WET/2011-1. Ohio Environmental Protection Agency, Wetland Ecology Group, Division of Surface Water, Columbus, Ohio.

Micacchion, M. and B. Gara. 2008. An Ecological and Functional Assessment of Urban Wetlands in Central Ohio. Volume 3: Comparisons of the Amphibian Communities of Urban and Reference Wetlands Using Level 1, 2 and 3 Assessment Tools. Ohio EPA Technical Report WET/2008-1. Ohio Environmental Protection Agency, Wetland Ecology Group, Division of Surface Water, Columbus, Ohio.

Micacchion, Mick, Brian D. Gara, and John J. Mack. 2010. Assessment of Wetland Mitigation Projects in Ohio. Volume 1: An Ecological Assessment of Ohio Individual Wetland Mitigation Projects. Ohio EPA Technical Report WET/2010-1A. Ohio Environmental Protection Agency, Wetland Ecology Group, Division of Surface Water, Groveport, Ohio.

Minitab 16 Statistical Software (2010). [Computer software]. State College, PA: Minitab, Inc. (www.minitab.com)

Ohio Division of Natural Areas and Preserves. 2008. Rare native Ohio plants: 2008-09 status list. Ohio Department of Natural Resources, Columbus, OH. 28 pp.

Ohio EPA (Ohio Environmental Protection Agency, Division Surface Water). 2012. Ohio 2012 Integrated Water Quality Monitoring and Assessment Report. Published on http://epa.ohio.gov/dsw/tmdl/OhioIntegratedReport.aspx

Ohio Statewide Imagery Program (OSIP). 2006-2007. Ohio Office of Information Technology, Ohio Geographically Referenced Information Program (OGRIP). http://ogrip.oit.ohio.gov/.

Omernik, J. M. (1987). Ecoregions of the Conterminous United States. *Annals of the Association of American geographers*, *77*(1), 118-125.

Ramirez, J. R. (1996). Generating Information from Scanning Ohio Maps (GISOM): the Conversion of 7.5-minute Quadrangles to DLG-3 files for the State of Ohio. *Surveying and Land Information Systems*, *56*(3), 133-142.

Rankin, E. T. (2006). Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI). *OHIO EPA Technical Bulletin EAS. State of Ohio Environmental Protection Agency, Division of Surface Water*.

Seaber, P. R., Kapinos, F. P., & Knapp, G. L. (1987). *Hydrologic Unit Maps: US Geological Survey Water Supply Paper 2294*. US Geological Survey.

Soil Survey Staff, Natural Resources Conservation Service (NRCS), U.S. Department of Agriculture. Soil surveys for each Ohio County available online from http://soildatamart.nrcs.usda.gov/Survey.aspx?State=OH [Accessed 2009].

Stevens Jr, D. L., & Olsen, A. R. (2004). Spatially Balanced Sampling of Natural Resources. *Journal of the American Statistical Association*, *99*(465), 262-278.

U.S. Census Bureau. 1990. U.S. Census. Available from: http://www.census.gov/main/www/cen1990.html

U.S. Census Bureau. 2000. U.S. Census. Available from: http://www.census.gov/main/www/cen2000.html

U.S. Census Bureau. 2010. U.S. Census. Available from: http://www.census.gov/2010census/.

US Fish and Wildlife Service. (2006-2007). *National Wetlands Inventory*. US Fish & Wildlife Service, National Wetlands Inventory.

Vogelmann, J.E., S.M. Howard, L. Yang, C. R. Larson, B. K. Wylie, and J. N. Van Driel, 2001, "Completion of the 1990's National Land Cover Data Set for the Conterminous United States," *Photogrammetric Engineering and Remote Sensing,* (Volume 67), pp. 650-662.

Xian, G., Homer, C., Dewitz, J., Fry, J., Hossain, N., and Wickham, J., 2011. "The Change of Impervious Surface Area Between 2001 and 2006 in the Conterminous United States." *Photogrammetric Engineering and Remote Sensing*, (Volume 77 Issue 8), pp. 758-762.

Yang L, Huang C, Homer C, Wylie B, and Coan M. 2003. "An Approach for Mapping Large-area Impervious Surfaces: Synergistic Use of Landsat 7 ETM+ and High Spatial Resolution Imagery." *Canadian Journal of Remote Sensing,* (Volume 29), pp. 230-240.

Yoder, C. O. (1991). The Integrated Biosurvey as a Tool for Evaluation of Aquatic Life Use Attainment and Impairment in Ohio Surface Waters. *Biological Criteria: Research and Regulation*, 110-122

Tables

Table 1. 1992 National Land Cover Dataset (NLCD) Land Use Categories (Vogelmann et.al., 2001) and corresponding Landscape Development Intensity (LDI) Coefficients (*derived from* Brown and Vivas, 2005).

Land Use Category	LDI Coefficient
11 (Open Water)	1.00
21 (Low Intensity Residential)	7.47
22 (High Intensity Residential)	7.55
23 (Commercial/Industrial/Transportation)	9.42
31 (Bare Rock/Sand/Clay)	8.32
32 (Quarries/Strip Mines/Gravel Pits)	8.32
33 (Transitional)	8.32
41 (Deciduous Forest)	1.00
42 (Evergreen Forest)	1.00
43 (Mixed Forest)	1.00
52 (Shrub/Scrub)	2.02
71 (Grassland/Herbaceous)	3.41
81 (Pasture)	3.74
82 (Row Crops)	4.54
85 (Urban/Recreational Grasses)	6.92
91 (Woody Wetlands)	1.00
92 (Emergent Wetlands)	1.00

Table 2. 2001 and 2006 National Land Cover Dataset (NLCD) Land Use Categories (Homer et.al., 2004; Fry et. al., 2011) and corresponding Landscape Development Intensity (LDI) Coefficients (*derived from* Brown and Vivas, 2005).

Land Use Category	LDI Coefficient
11 (Open Water)	1.00
21 (Developed, Open Space)	6.92
22 (Developed, Low Intensity)	7.47
23 (Developed, Medium Intensity)	7.55
24 (Developed, High Intensity)	9.42
31 (Barren Land)	8.32
41 (Deciduous Forest)	1.00
42 (Evergreen Forest)	1.00
43 (Mixed Forest)	1.00
52 (Shrub/Scrub)	2.02
71 (Grassland/Herbaceous)	3.41
81 (Pasture/Hay)	3.74
82 (Cultivated Crops)	4.54
90 (Woody Wetlands)	1.00
95 (Emergent Herbaceous Wetlands)	1.00

Table 3. Middle Scioto TMDL area wetland sampling locations and assessment results.

Site ID	Area (acres)	Cowardin Code	Wetland Type	Longitude	Latitude	Year	ORAM	ORAM Category	VIBI	VIBI-FQ
001	0.141782	PEMA	Emergent	-82.984923	39.663640	2010	46.5	2	20.0	38.46
002	0.339731	PEMA	Emergent	-82.917595	39.653383	2010	19.0	1	NA	NA
003	1.408849	PFO1A	Forested	-82.942855	39.775317	2010	55.0	2	51.0	54.51
004	0.524567	PFO1A	Forested	-83.207457	40.087042	2010	67.0	3	50.0	65.27
005	2.696891	PEMF	Emergent	-82.953631	39.657259	2010	25.5	1	20.0	3.14
007	0.168155	PFO1A	Forested	-83.011713	39.717394	2012	49.5	2	NA	NA
010	2.156009	PFO1A	Forested	-83.090507	40.012178	2010	55.5	2	39.0	50.39
018	0.263096	PFO1C	Forested	-83.196193	40.091401	2010	53.0	2	46.0	42.47
021a	0.288798	PEMA	Forested	-82.967032	39.640970	2010	56.5	2	37.0	54.20
021b	0.288798	PFO1C	Forested	-82.967032	39.640970	2010	56.5	2	24.0	30.95
022	0.656775	PEMC	Emergent	-83.148378	40.037223	2010	17.0	1	NA	NA
023	1.282204	PEMC	Emergent	-83.024939	39.797035	2010	20.0	1	23.0	23.02
027	1.397674	PEMCh	Emergent	-83.147735	40.242136	2010	78.5	3	87.0	80.16
032	3.235745	PFO1A	Forested	-83.147648	40.096604	2012	38.0	Modified 2	NA	NA
035	2.898011	PFO1C	Forested	-82.999048	39.758032	2012	40.0	Modified 2	NA	NA
039	0.539485	PEMC	Emergent	-83.034916	39.814682	2010	44.5	Modified 2	NA	NA
046	0.795345	PSS1A	Scrub-Shrub	-83.013304	39.837746	2010	36.0	Modified 2	NA	NA
049	0.313442	PEMC	Emergent	-83.130584	40.063475	2010	31.0	Modified 2	NA	NA
055	0.246014	PEMC	Emergent	-83.006404	39.704656	2012	58.0	2	NA	NA
057	0.836275	PFO1C	Forested	-82.980092	39.788585	2012	26.5	1	NA	NA
058	7.202414	PEMF	Emergent	-83.179563	40.123408	2012	34.0	Modified 2	NA	NA
061	0.665624	PEMC	Emergent	-82.984701	39.757018	2012	19.5	1	NA	NA
063	1.226248	PFO1C	Forested	-82.965852	39.633597	2012	46.5	2	NA	NA
065	0.920317	PSS1A	Scrub-Shrub	-83.013545	39.839326	2010	36.0	Modified 2	NA	NA
066	0.345344	PFO1Ch	Forested	-83.139081	40.223813	2012	65.0	3	NA	NA
068	2.146569	PEMA	Emergent	-83.193861	40.158959	2012	32.0	Modified 2	NA	NA
070	7.592747	PEMA	Emergent	-83.192748	40.135375	2012	34.0	Modified 2	NA	NA
080	0.422843	PEMA	Emergent	-83.173466	40.042730	2012	41.0	Modified 2	NA	NA
082	2.914693	PFO1C	Forested	-83.118882	40.138979	2012	59.5	2	NA	NA
083	1.472093	PFO1C	Forested	-82.993426	39.692750	2012	43.0	Modified 2	NA	NA
085	2.115701	PEMC	Emergent	-82.998634	39.764321	2010	38.5	Modified 2	NA	NA
093	0.790332	PEMA	Emergent	-82.985074	39.678746	2012	23.0	1	NA	NA
100	0.786114	PFO1Ch	Forested	-83.148172	40.238271	2010	63.5	3	NA	NA
102	1.263845	PEMC	Emergent	-83.179476	40.126988	2012	35.0	Modified 2	NA	NA
110	0.289190	PEMA	Emergent	-83.087153	39.812020	2012	16.5	1	NA	NA
111	1.238872	PEMC	Emergent	-83.132005	40.050792	2012	21.0	1	NA	NA
118	0.391229	PEMF	Emergent	-83.186730	40.132209	2012	32.0	Modified 2	NA	NA
127	0.550798	PEMB	Emergent	-83.162972	40.054918	2012	38.0	Modified 2	NA	NA
133	1.669319	PSS1/EMA	Forested	-83.182024	40.169233	2012	38.0	Modified 2	NA	NA
141	0.132831	PEMC	Emergent	-83.097320	40.075305	2012	29.0	1	NA	NA
143	1.267044	PFO1C	Forested	-83.162005	40.026384	2012	23.5	1	NA	NA
152	6.293975	PFO1A	Forested	-82.990653	39.672087	2012	47.5	2	NA	NA
154	13.171259	PEMF	Emergent	-83.029233	39.831977	2012	39.0	Modified 2	NA	NA
156	0.562334	PFO1A	Forested	-82.991483	39.692957	2012	52.5	2	NA	NA
162	1.991427	PFO1C	Forested	-82.956359	39.794947	2012	30.5	Modified 2	NA	NA
163	0.636226	PEMA	Emergent	-82.859910	39.664079	2012	17.5	1	NA	NA
165	0.377591	PFO1A	Forested	-83.192512	40.086443	2012	52.5	2	NA	NA
181	1.276208	PFO1A	Forested	-83.188820	40.185339	2012	66.0	3	NA	NA
184	8.235739	PSS1/EMC	Scrub-Shrub	-82.973660	39.671237	2012	33.0	Modified 2	NA	NA
193	0.305039	PFO1C	Forested	-83.199665	40.156235	2012	67.5	3	NA	NA
194	0.306308	PEMC	Emergent	-83.116325	40.237183	2012	22.0	1	NA	NA

Table 4. Comparison of various landscape parameters with Ohio EPA Wetland Ecology Group field assessment data collected on natural wetlands in Ohio.

Parameter	VIBI (N=298)		VIBI-FQ (N=298)		ORAM (N=291)	
	R-Sq	P	R-Sq	P	R-Sq	P
LDI 1992 NLCD (0 to 100 meter buffer)	***18.9***	***0***	***19***	***0***	***31***	***0***
LDI 1992 NLCD (100 to 350 meter buffer)	***21.6***	***0***	***15.7***	***0***	***29.6***	***0***
LDI 2001 NLCD (0 to 100 meter buffer)	16.7	0	18.8	0	25.7	0
LDI 2001 NLCD (100 to 350 meter buffer)	19.9	0	17.6	0	25.6	0
LDI 2006 NLCD (0 to 100 meter buffer)	***19***	***0***	***20.2***	***0***	***28.1***	***0***
LDI 2006 NLCD (100 to 350 meter buffer)	***20.5***	***0***	***17.7***	***0***	***26.2***	***0***
LDI 2006 - 1992 Difference (0 to 100 meter buffer)	3.1	0.002	3.8	0.001	3.4	0.002
LDI 2006 - 1992 Difference (100 to 350 meter buffer)	3.5	0.001	5.4	0	3	0.003
Impervious Surface Percent based on 2001 NLCD (0 to 100 meter buffer)	6.8	0	4.9	0	9.3	0
Impervious Surface Percent based on 2001 NLCD (100 to 350 meter buffer)	13.1	0	11.1	0	16.8	0
Impervious Surface Percent based on 2006 NLCD (0 to 100 meter buffer)	***9.3***	***0***	***6.9***	***0***	***11.8***	***0***
Impervious Surface Percent based on 2006 NLCD (100 to 350 meter buffer)	***13***	***0***	***10.6***	***0***	***16.9***	***0***
Impervious Surface 2006 - 2001 Difference (0 to 100 meter buffer)	2.7	0.004	2.4	0.007	2.6	0.006
Impervious Surface 2006 - 2001 Difference (100 to 350 meter buffer)	1.6	0.03	0.7	0.137	2.6	0.006
Forest Canopy Percent based on 2001 NLCD (0 to 100 meter buffer)	***15.6***	***0***	***21***	***0***	***22.4***	***0***
Forest Canopy Percent based on 2001 NLCD (100 to 350 meter buffer)	***19.2***	***0***	***17.4***	***0***	***23.5***	***0***
Historic Forest Percent based on DRG (0 to 100 meter buffer)	***13***	***0***	***22.2***	***0***	***19.5***	***0***
Historic Forest Percent based on DRG (100 to 350 meter buffer)	***23***	***0***	***23.4***	***0***	***24.5***	***0***
Forest Change from Historic (DRG) to Current (2001 NLCD) (0 to 100 meter buffer)	0.9	0.108	3.2	0.002	1.6	0.033
Forest Change from Historic (DRG) to Current (2001 NLCD) (100 to 350 meter buffer)	0.4	0.264	1	0.087	0.1	0.686
2008 Natural Heritage DB Record Density (0 to 100 meter buffer)	5.7	0	6.7	0	2.5	0.007
2008 Natural Heritage DB Record Density (100 to 350 meter buffer)	5.7	0	6.7	0	2.5	0.007
NWI Polygon Area (0 to 100 meter buffer)	5.7	0	3.1	0.002	6	0
NWI Polygon Area (100 to 350 meter buffer)	3.4	0.001	1.7	0.023	2.8	0.004
"Historic Wetland" Area derived from DRG (0 to 100 meter buffer)	1.3	0.049	0.2	0.397	1.2	0.068
"Historic Wetland" Area derived from DRG (100 to 350 meter buffer)	0	0.769	0.1	0.634	0.1	0.702
Natural Land Uses - Human Land Uses derived from 1992 NLCD (0 to 100 meter buffer)	***16.1***	***0***	***17.9***	***0***	***23***	***0***
Natural Land Uses - Human Land Uses derived from 1992 NLCD (100 to 350 meter buffer)	***22***	***0***	***16.4***	***0***	***25.9***	***0***
Natural Land Uses - Human Land Uses derived from 2001 NLCD (0 to 100 meter buffer)	18.6	0	22	0	26.2	0
Natural Land Uses - Human Land Uses derived from 2001 NLCD (100 to 350 meter buffer)	21.4	0	19.7	0	26.5	0
Natural Land Uses - Human Land Uses derived from 2006 NLCD (0 to 100 meter buffer)	***20.6***	***0***	***23.5***	***0***	***28.7***	***0***
Natural Land Uses - Human Land Uses derived from 2006 NLCD (100 to 350 meter buffer)	***22.6***	***0***	***20.3***	***0***	***27.6***	***0***
Parkland Area derived from DU 2008 CARL (0 to 100 meter buffer)	4.5	0	4.3	0	5.4	0
Parkland Area derived from DU 2008 CARL (100 to 350 meter buffer)	3.3	0.002	2.7	0.005	4.3	0
Population Density derived from 1990 US Census (0 to 100 meter buffer)	***6.6***	***0***	***3.7***	***0.001***	***4.5***	***0***
Population Density derived from 1990 US Census (100 to 350 meter buffer)	***7***	***0***	***4.7***	***0***	***5.3***	***0***
Population Density derived from 2000 US Census (0 to 100 meter buffer)	5.8	0	4.2	0	5.1	0
Population Density derived from 2000 US Census (100 to 350 meter buffer)	6.2	0	4.7	0	5.6	0
Population Density derived from 2010 US Census (0 to 100 meter buffer)	***6.2***	***0***	***4.7***	***0***	***5.7***	***0***
Population Density derived from 2010 US Census (100 to 350 meter buffer)	***6.6***	***0***	***5.3***	***0***	***6.3***	***0***
Population Density 2010-1990 Difference (0 to 100 meter buffer)	1.6	0.029	2.1	0.013	2.6	0.006
Population Density 2010-1990 Difference (100 to 350 meter buffer)	1.6	0.027	2.1	0.013	2.9	0.004
Predominantly Hydric Soil Area derived from NRCS SSURGO (0 to 100 meter buffer)	0.2	0.492	0	0.714	0.4	0.28
Predominantly Hydric Soil Area derived from NRCS SSURGO (100 to 350 meter buffer)	0.6	0.171	0.5	0.22	0.9	0.109
SSURGO Sand/Muck Soils or ODNR Rare Plant Species (0 to 100 meter buffer)	***12.8***	***0***	***18.1***	***0***	***8.4***	***0***
SURGO Sand/Muck Soils or ODNR Rare Plant Species (100 to 350 meter buffer)	***11.3***	***0***	***13.7***	***0***	***6***	***0***

Table 5. Metric scoring ranges for parameters included in the Ohio EPA level 1 wetland assessment.

Parameter	Parameter Category	Metric Score = 0	Metric Score = 3	Metric Score = 7	Metric Score = 10
LDI 1992 NLCD (0 to 100 meters)	*Historic*	*2.663020 - 7.158644*	*1.475001 - 2.663019*	*1.052693 - 1.475000*	*1.000000 - 1.052692*
LDI 1992 NLCD (100 to 350 meters)	*Historic*	*3.496929 - 6.415488*	*2.239654 - 3.496928*	*1.537938 - 2.239653*	*1.000000 - 1.537937*
Historic Forest Percent based on DRG (0 to 100 meters)	*Historic*	*0.000000 - 4.805492*	*4.805493 - 45.333333*	*45.333334 - 81.880734*	*81.880735 - 100.000000*
Historic Forest Percent based on DRG (100 to 350 meters)	*Historic*	*0.000000 - 11.911357*	*11.911358 - 26.481195*	*26.481196 - 49.355005*	*49.355006 - 100.000000*
Natural Land Uses - Human Land Uses derived from 1992 NLCD (0 to 100 meters)	*Historic*	*-100.000000 - 12.000000*	*12.000001 - 63.636364*	*63.636365 - 93.750000*	*93.750001 - 100.000000*
Natural Land Uses - Human Land Uses derived from 1992 NLCD (100 to 350 meters)	*Historic*	*-100.000000 - -23.394495*	*-23.394494 - 23.113208*	*23.113209 - 62.149533*	*62.149534 - 98.604651*
Population Density derived from 1990 US Census (0 to 100 meters)	*Historic*	*281.477892 - 3878.679689*	*103.357315 - 281.477891*	*49.906198 - 103.357314*	*2.580520 - 49.906197*
Population Density derived from 1990 US Census (100 to 350 meters)	*Historic*	*282.872407 - 3882.098389*	*103.050195 - 282.872406*	*49.906209 - 103.357314*	*2.580525 - 49.906208*
SSURGO Sand/Muck Soils or ODNR Rare Plant Species (0 to 100 meters)	*Historic*	*0.000000*	*0.000001 - 4.988520*	*4.988521 - 11.203282*	*11.203283 - 116.174171*
SURGO Sand/Muck Soils or ODNR Rare Plant Species (100 to 350 meters)	*Historic*	*0.000000*	*0.000001 - 9.406911*	*9.406912 - 46.216751*	*46.216752 - 296.915680*
LDI 2006 NLCD (0 to 100 meters)	*Current*	*3.586079 - 7.133125*	*1.986668 - 3.586078*	*1.000001 - 1.986667*	*1.000000*
LDI 2006 NLCD (100 to 350 meters)	*Current*	*4.201624 - 7.720233*	*2.712825 - 4.201623*	*1.636953 - 2.712824*	*1.000000 - 1.636952*
Impervious Surface Percent based on 2006 NLCD (0 to 100 meters)	*Current*	*5.807693 - 42.173077*	*1.152175 - 5.807692*	*0.000001 - 1.152174*	*0.000000*
Impervious Surface Percent based on 2006 NLCD (100 to 350 meters)	*Current*	*6.007265 - 58.896471*	*0.756441 - 6.007264*	*0.094908 - 0.756440*	*0.000000 - 0.094907*
Forest Canopy Percent based on 2001 NLCD (0 to 100 meters)	*Current*	*0.000000 - 31.687500*	*31.687501 - 58.647059*	*58.647060 - 80.591837*	*80.591838 - 91.755102*
Forest Canopy Percent based on 2001 NLCD (100 to 350 meters)	*Current*	*0.000000 - 22.086047*	*22.086048 - 44.384439*	*44.384440 - 62.288991*	*62.288992 - 90.389277*
Natural Land Uses - Human Land Uses derived from 2006 NLCD (0 to 100 meters)	*Current*	*-100.000000 - -7.843137*	*-7.843136 - 64.912281*	*64.912282 - 98.076923*	*98.076924 - 100.000000*
Natural Land Uses - Human Land Uses derived from 2006 NLCD (100 to 350 meters)	*Current*	*-100.000000 - -37.619048*	*-37.619047 - 13.895216*	*13.895217 - 60.879630*	*60.879631 - 100.000000*
Population Density derived from 2010 US Census (0 to 100 meters)	*Current*	*474.845704 - 7340.631348*	*133.767427 - 474.485703*	*59.511338 - 133.767426*	*0.455506 - 59.511337*
Population Density derived from 2010 US Census (100 to 350 meters)	*Current*	*466.085633 - 7284.695801*	*133.223237 - 466.085632*	*58.442479 - 133.223236*	*0.933198 - 58.442478*

Figures

Figure 1. Middle Scioto TMDL study area boundary.

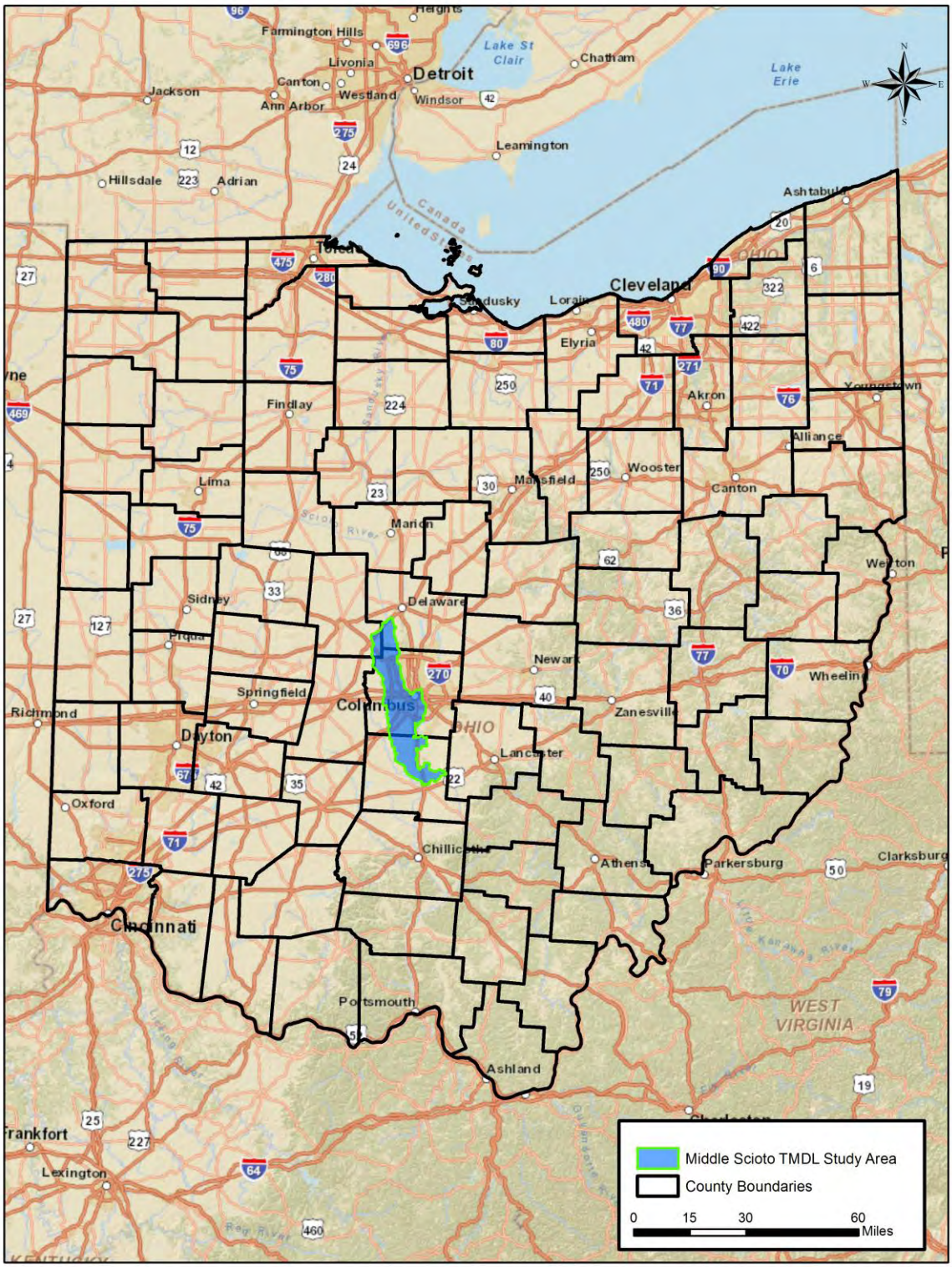


Figure 2. Land use categories, as depicted on the 2006 National Land Cover Dataset (NLCD), for the Middle Scioto TMDL area.

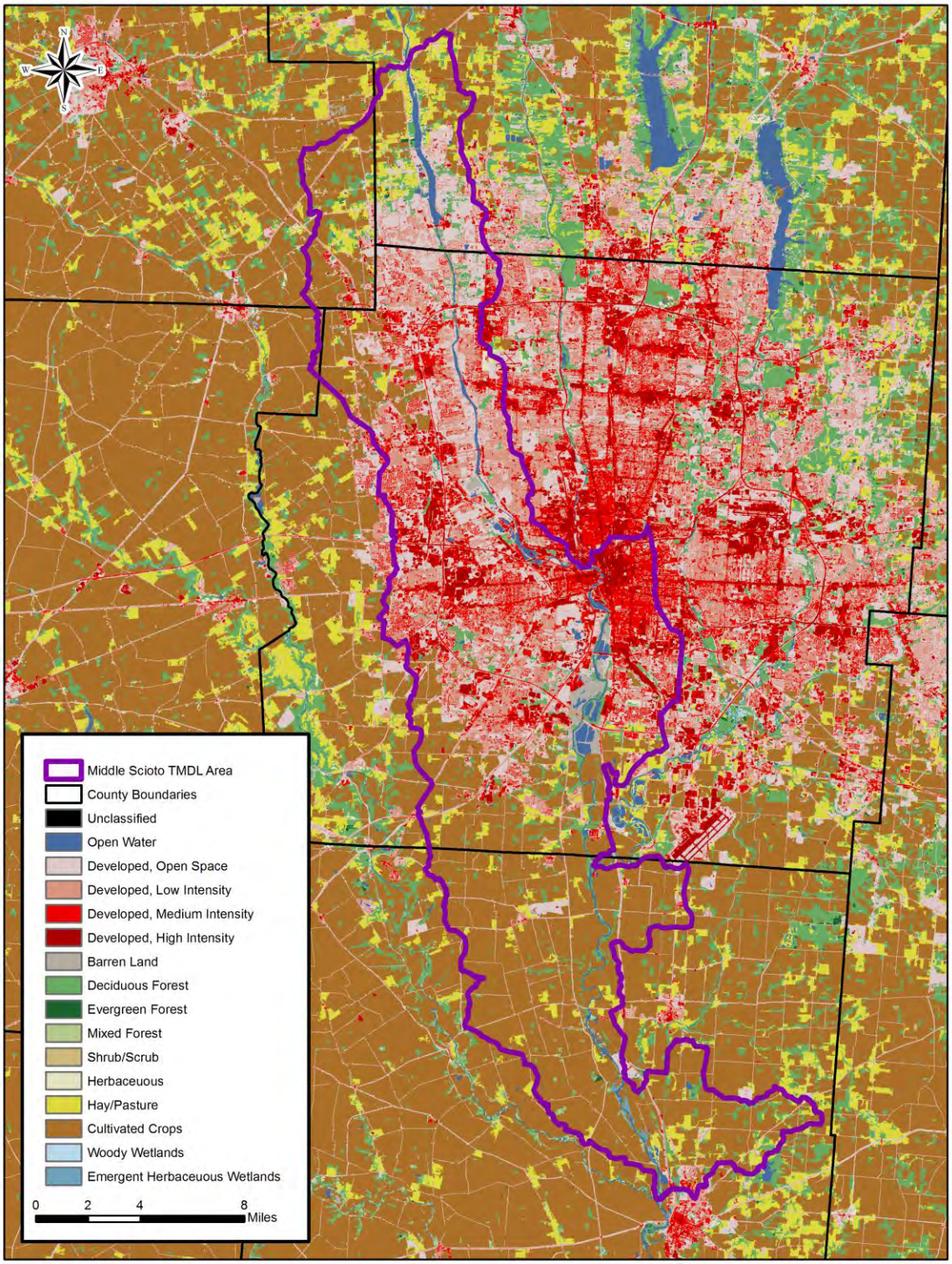


Figure 3. All mapped emergent, scrub-shrub, and forested National Wetland Inventory (NWI) wetlands in the Middle Scioto TMDL area.

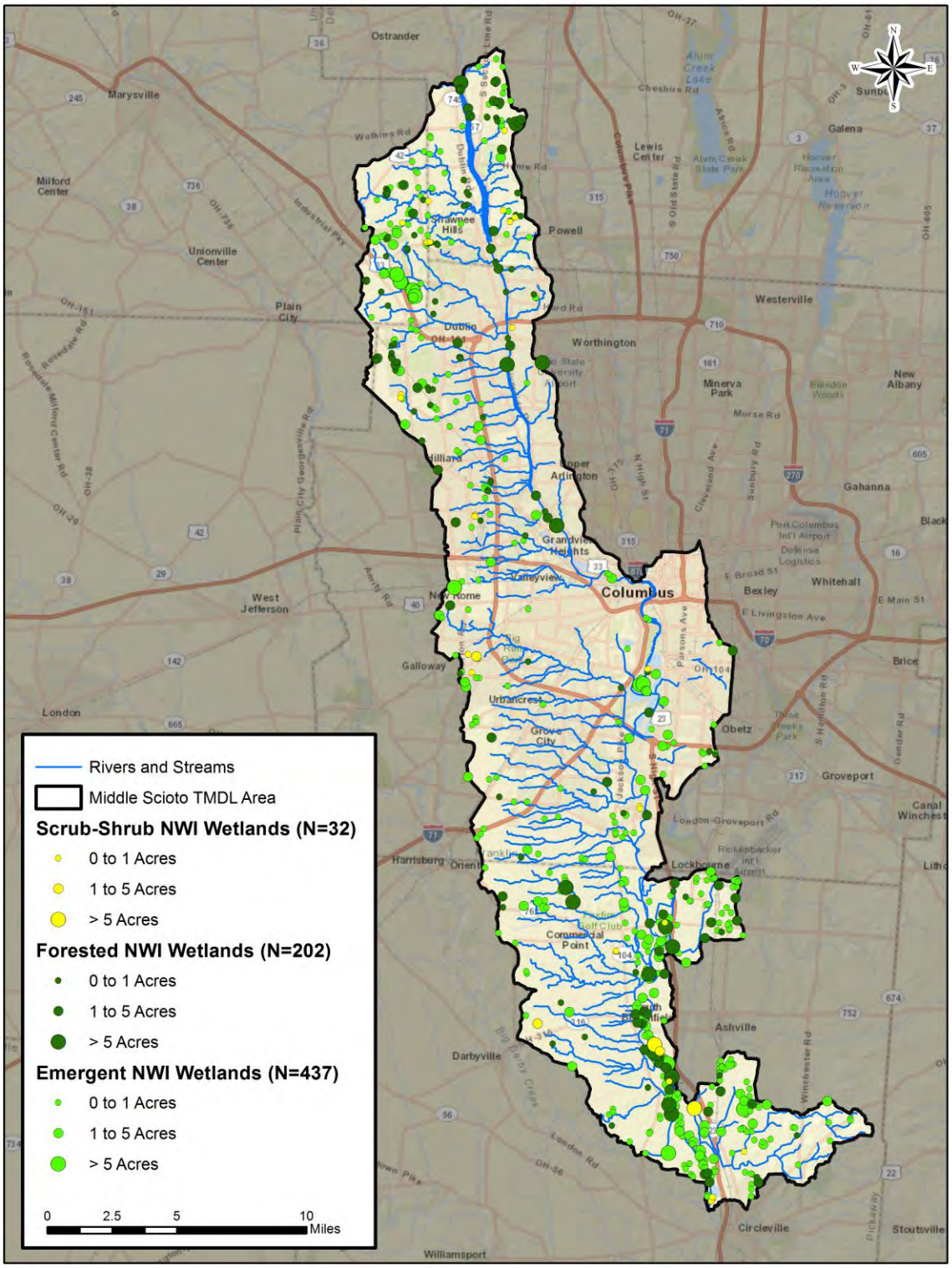


Figure 4. ORAM and VIBI assessment locations in the Middle Scioto TMDL area.

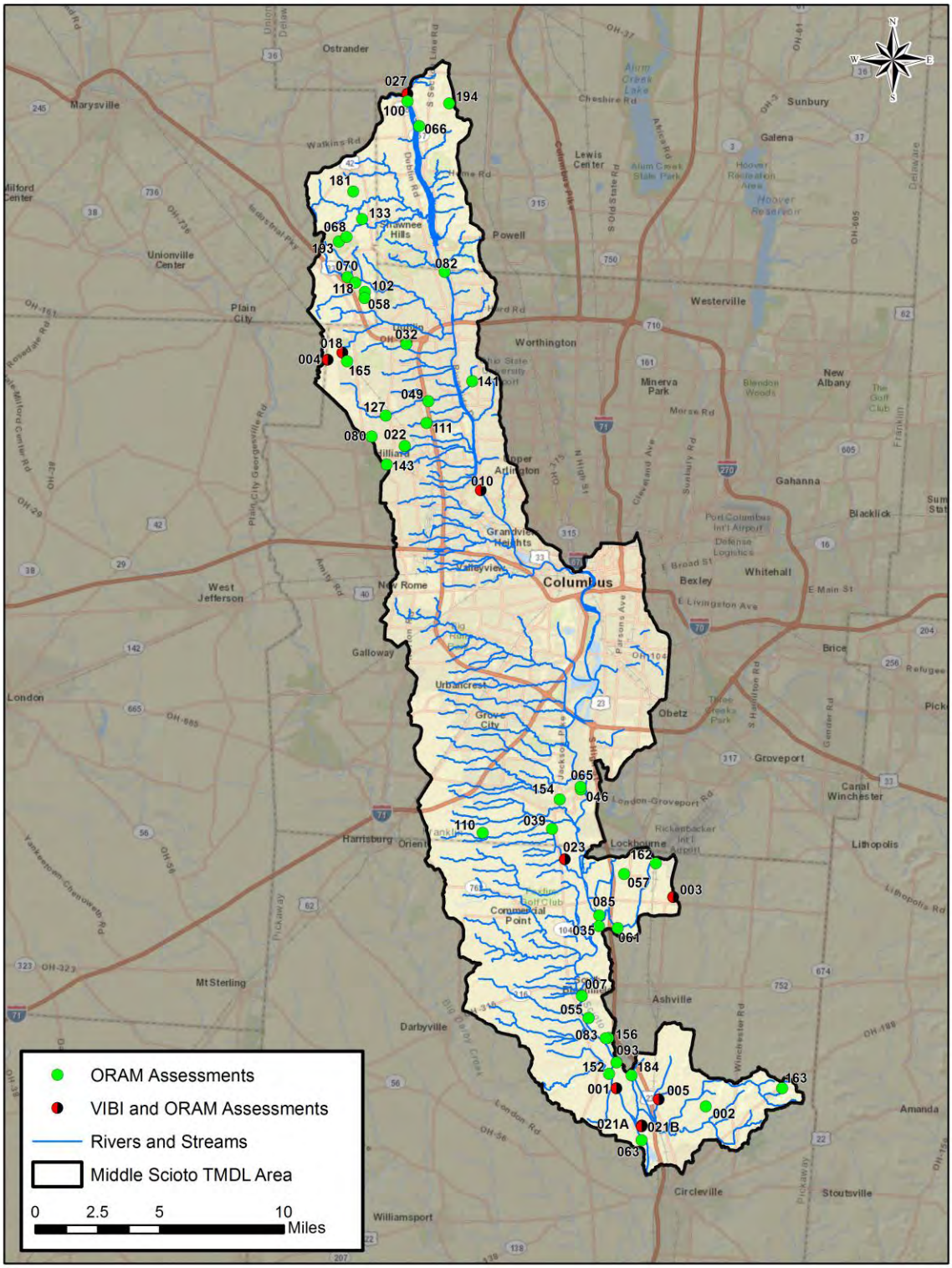


Figure 5. Location of VIBI plots for all natural wetlands assessed by the Ohio EPA Wetland Ecology Group from 1996 to 2011.

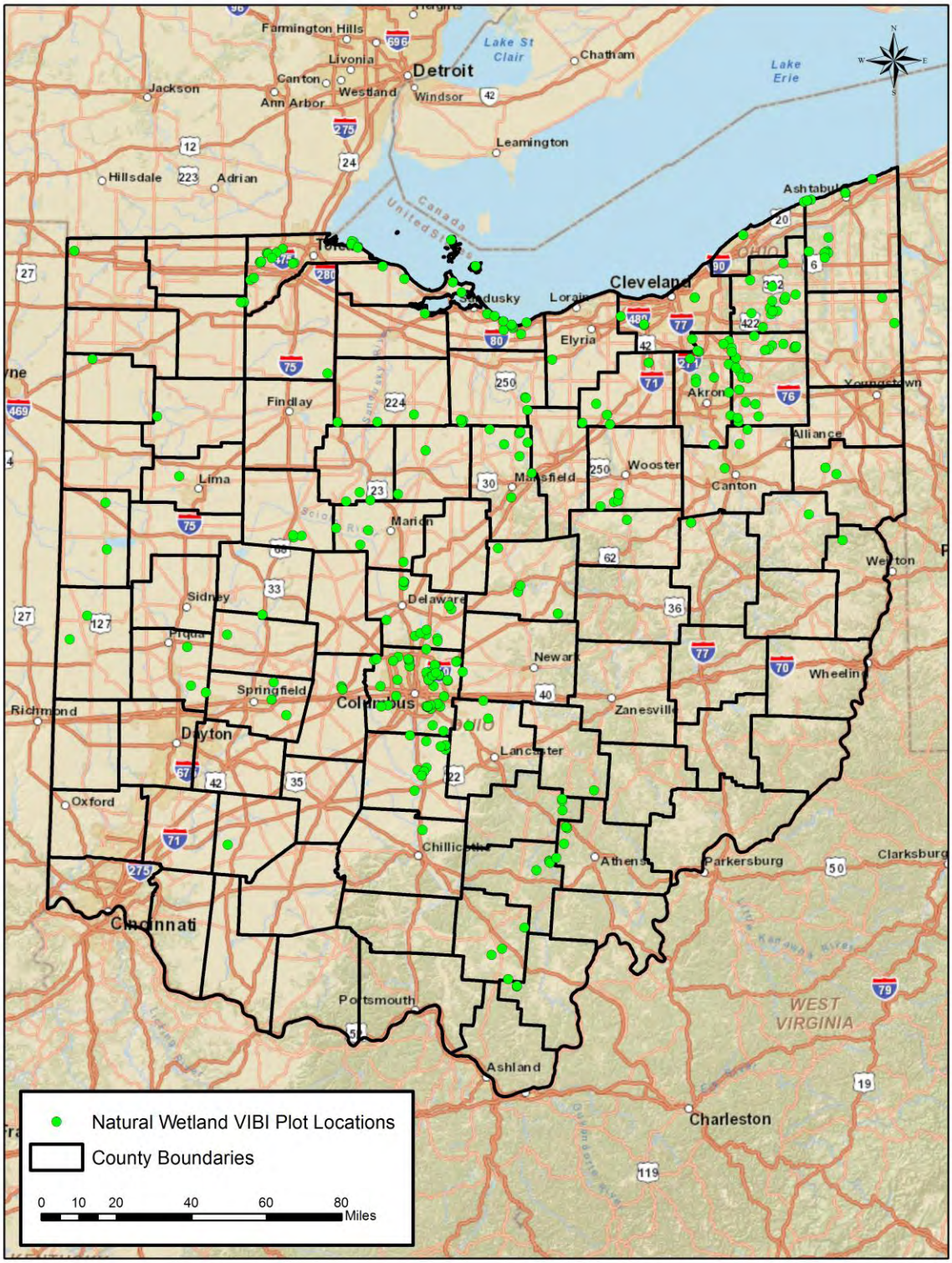
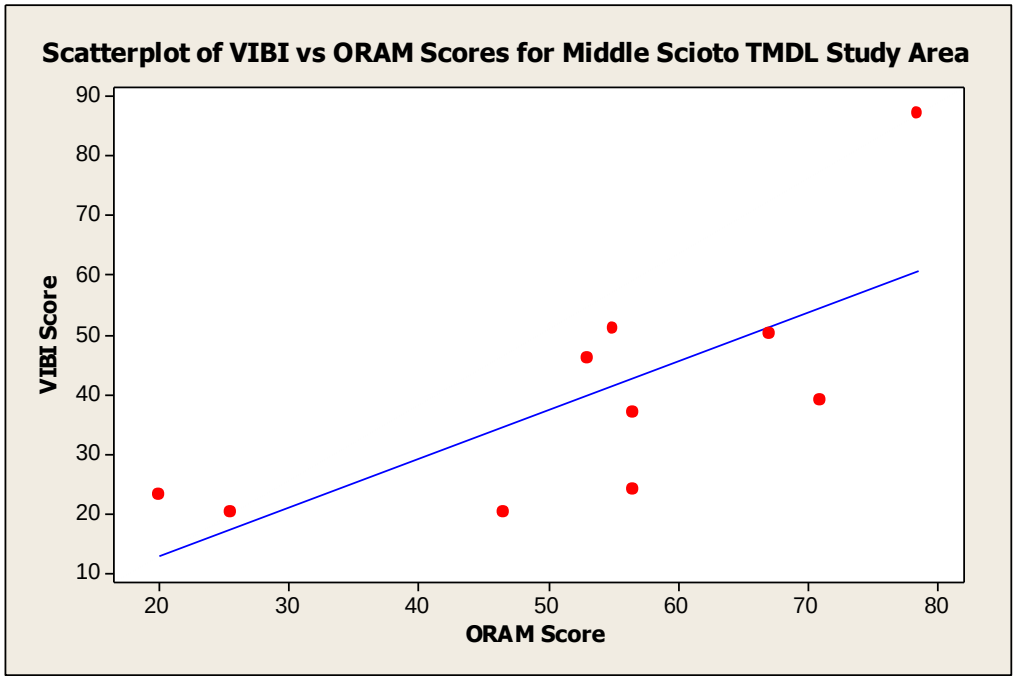
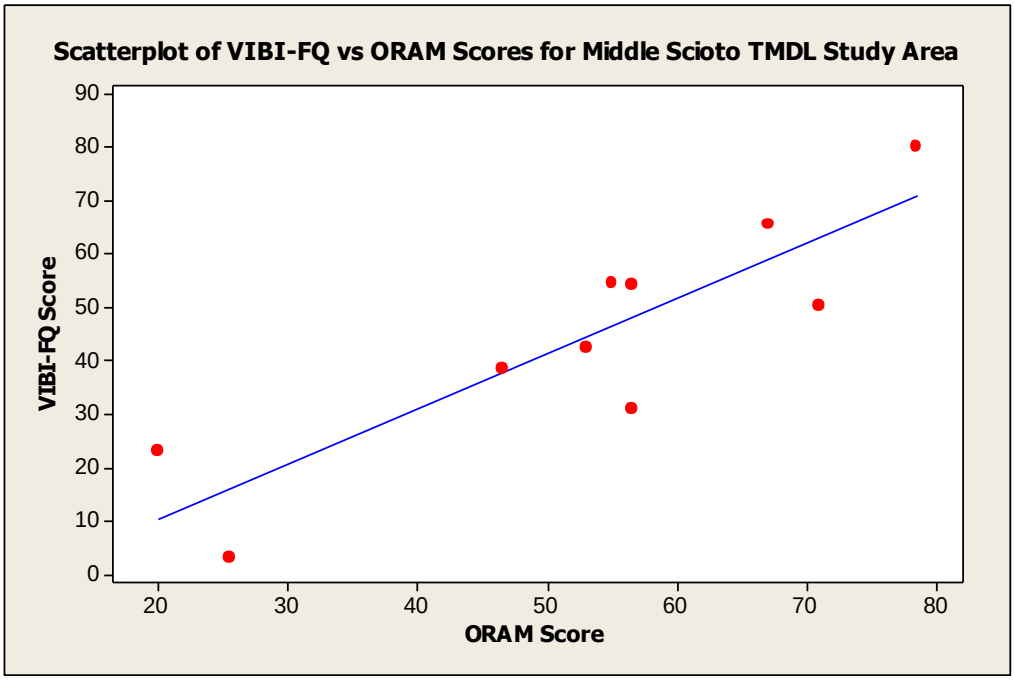


Figure 6. Scatterplot and regression analysis of VIBI score versus ORAM score for 10 random wetland locations in the Middle Scioto TMDL study area.



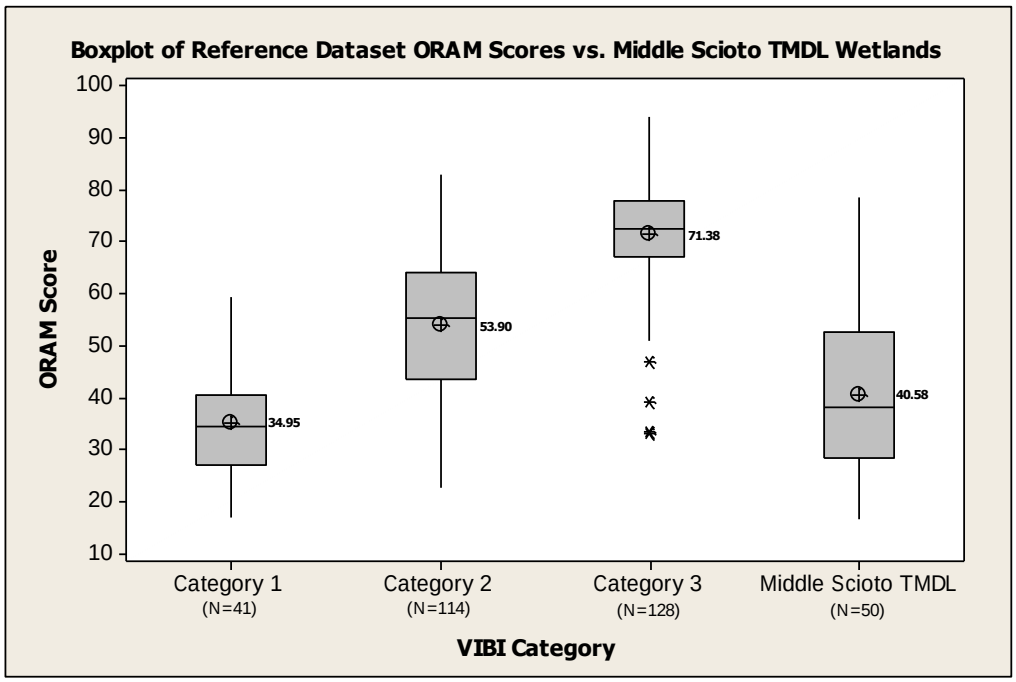

```
The regression equation is
VIBI_SCORE = - 3.5 + 0.816 ORAM_V5

Predictor     Coef  SE Coef      T      P
Constant     -3.48    14.93  -0.23  0.821
ORAM_V5     0.8155   0.2676   3.05  0.016

S = 14.8643   R-Sq = 53.7%   R-Sq(adj) = 47.9%

Analysis of Variance
Source           DF      SS      MS     F      P
Regression        1  2052.5  2052.5  9.29  0.016
Residual Error    8  1767.6   220.9
Total             9  3820.1

Unusual Observations
Obs  ORAM_V5  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 10     78.5       87.00  60.54    8.30     26.46     2.15R

R denotes an observation with a large standardized residual.
```

Figure 7. Scatterplot and regression analysis of VIBI-FQ score versus ORAM score for 10 random wetland locations in the Middle Scioto TMDL study area.



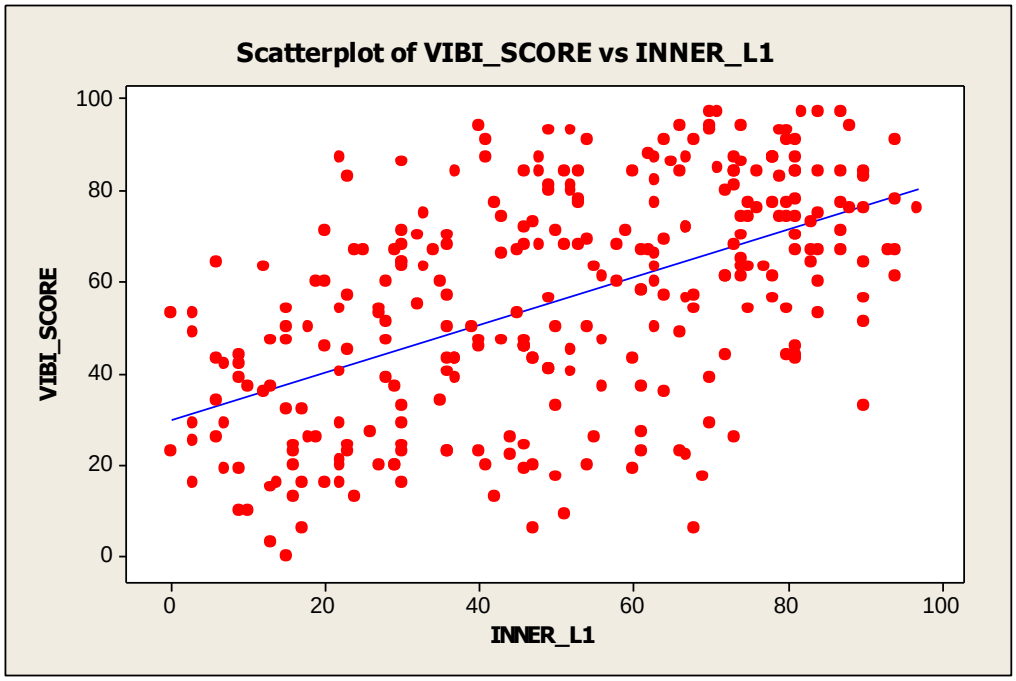

```
The regression equation is
VIBI_FQ = - 10.6 + 1.04 ORAM_V5

Predictor     Coef  SE Coef      T      P
Constant    -10.61    11.30  -0.94  0.375
ORAM_V5     1.0363   0.2026   5.11  0.001

S = 11.2554   R-Sq = 76.6%   R-Sq(adj) = 73.7%

Analysis of Variance
Source           DF      SS      MS      F      P
Regression        1  3314.1  3314.1  26.16  0.001
Residual Error    8  1013.5   126.7
Total             9  4327.6
```

Figure 8. Boxplot one-way ANOVA (with Tukey's comparison) of ORAM scores for 50 randomly-selected wetland locations in the Middle Scioto TMDL study area compared with ORAM scores recorded by the Ohio EPA Wetland Ecology group for natural wetlands in Ohio, organized by VIBI antidegradation category.



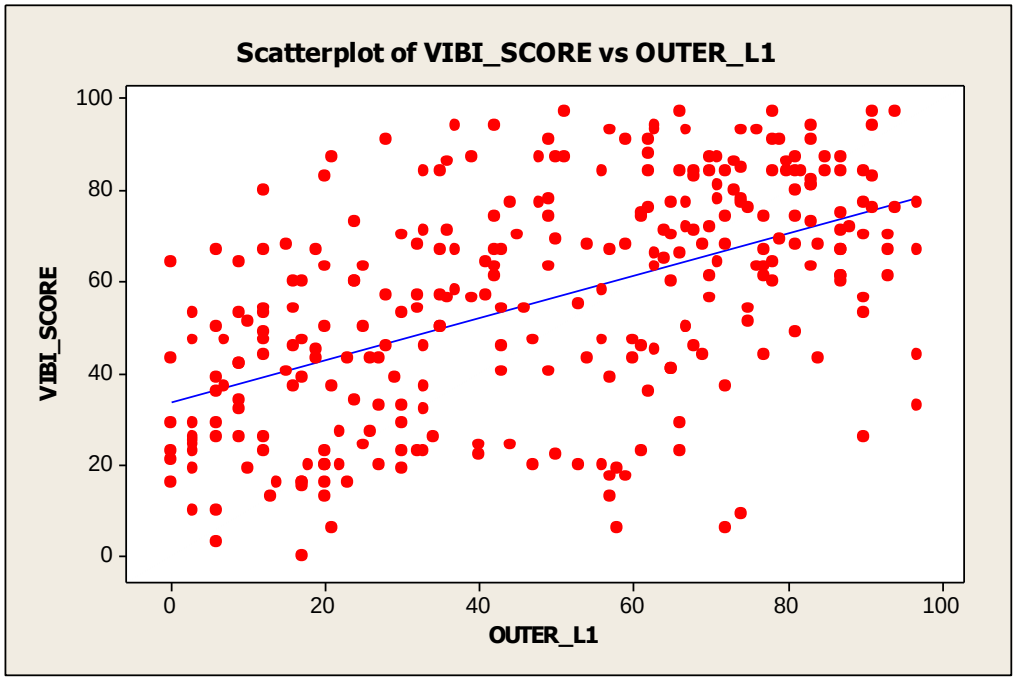

```
Source     DF      SS     MS       F      P
VIBI_CAT    3   60816  20272  129.46  0.000
Error     329   51518    157
Total     332  112334

S = 12.51   R-Sq = 54.14%   R-Sq(adj) = 53.72%

Level                  N   Mean  StDev
Category 1            41  34.95  10.91
Category 2           114  53.90  13.09
Category 3           128  71.38  10.72
N220                  50  40.58  16.17

Individual 95% CIs For Mean Based on Pooled StDev

Level      ----+---------+---------+---------+-----
Category 1 (--*--)
Category 2                  (-*-)
Category 3                                  (*-)
N220            (--*--)
           ----+---------+---------+---------+-----
              36        48        60        72

Pooled StDev = 12.51

Grouping Information Using Tukey Method

VIBI_CAT                N   Mean  Grouping
Category 3            128  71.38  A
Category 2            114  53.90    B
N220                   50  40.58      C
Category 1             41  34.95      C

Means that do not share a letter are significantly
different.

Tukey 95% Simultaneous Confidence Intervals
All Pairwise Comparisons among Levels of VIBI_CAT

Individual confidence level = 98.93%

VIBI_CAT = Category 1           subtracted from:

VIBI_CAT              Lower  Center  Upper
Category 2            13.10   18.95  24.80
Category 3            30.67   36.43  42.20
N220                  -1.14    5.63  12.40

VIBI_CAT   --------+---------+---------+---------+-
Category 2                          (-*--)
Category 3                                   (--*--)
N220                       (---*--)
           --------+---------+---------+---------+-
                 -20         0        20        40

VIBI_CAT = Category 2           subtracted from:

VIBI_CAT               Lower  Center  Upper
Category 3             13.34   17.48  21.62
N220                  -18.77  -13.32  -7.88

VIBI_CAT   --------+---------+---------+---------+-
Category 3                          (-*-)
N220                (-*--)
           --------+---------+---------+---------+-
                 -20         0        20        40

VIBI_CAT = Category 3           subtracted from:

VIBI_CAT               Lower  Center   Upper
N220                  -36.16  -30.80  -25.45

VIBI_CAT   --------+---------+---------+---------+-
N220       (--*-)
           --------+---------+---------+---------+-
                 -20         0        20        40
```

Figure 9. Scatterplot and regression analysis of VIBI score versus level 1 assessment score for area within 100 meters of assessment boundary.



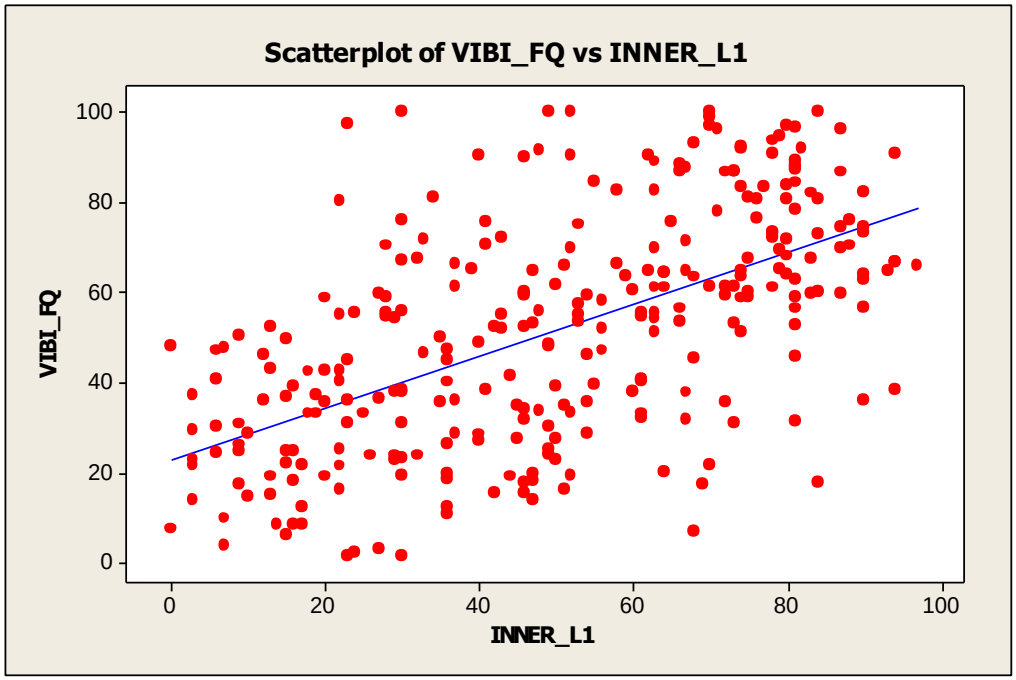

```
The regression equation is
VIBI_SCORE = 29.8 + 0.520 INNER_L1

Predictor      Coef  SE Coef      T      P
Constant     29.769    2.647  11.25  0.000
INNER_L1    0.52010  0.04704  11.06  0.000

S = 20.6086   R-Sq = 29.2%   R-Sq(adj) = 29.0%

Analysis of Variance
Source            DF      SS     MS       F      P
Regression         1   51919  51919  122.25  0.000
Residual Error   296  125716    425
Total            297  177635

Unusual Observations
Obs  INNER_L1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 40      73.0       26.00  67.74    1.60    -41.74    -2.03R
101      51.0        9.00  56.29    1.19    -47.29    -2.30R
121      40.0       94.00  50.57    1.29     43.43     2.11R
150      69.0       17.00  65.66    1.49    -48.66    -2.37R
156      23.0       83.00  41.73    1.75     41.27     2.01R
189      47.0        6.00  54.21    1.20    -48.21    -2.34R
203      67.0       22.00  64.62    1.43    -42.62    -2.07R
263      22.0       87.00  41.21    1.79     45.79     2.23R
276      60.0       19.00  60.98    1.28    -41.98    -2.04R
288      68.0        6.00  65.14    1.46    -59.14    -2.88R
292      90.0       33.00  76.58    2.22    -43.58    -2.13R

R denotes an observation with a large standardized residual.
```

Figure 10. Scatterplot and regression analysis of VIBI score versus level 1 assessment score for area from 100 to 350 meters of assessment boundary.



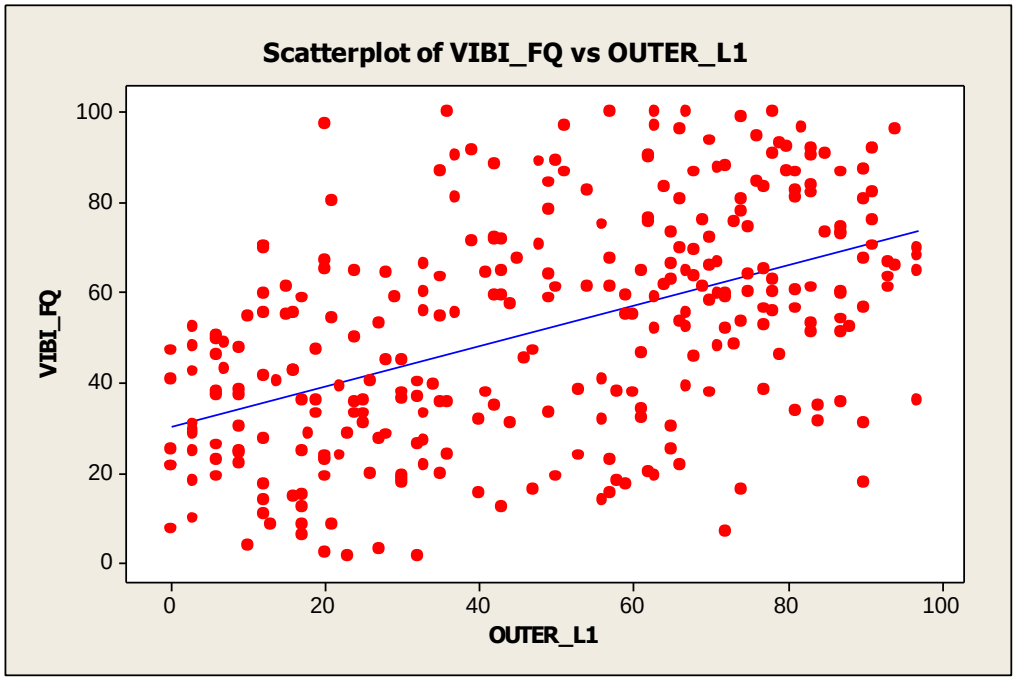

```
The regression equation is
VIBI_SCORE = 33.7 + 0.461 OUTER_L1

Predictor      Coef  SE Coef      T      P
Constant     33.665    2.394  14.06  0.000
OUTER_L1    0.46066  0.04289  10.74  0.000

S = 20.7804   R-Sq = 28.0%   R-Sq(adj) = 27.8%

Analysis of Variance
Source            DF      SS     MS       F      P
Regression         1   49816  49816  115.36  0.000
Residual Error   296  127820    432
Total            297  177635

Unusual Observations
Obs  OUTER_L1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 40      90.0       26.00  75.12    2.16    -49.12    -2.38R
101      74.0        9.00  67.75    1.63    -58.75    -2.84R
121      37.0       94.00  50.71    1.30     43.29     2.09R
150      59.0       17.00  60.84    1.29    -43.84    -2.11R
186      28.0       91.00  46.56    1.48     44.44     2.14R
189      58.0        6.00  60.38    1.27    -54.38    -2.62R
214      57.0       13.00  59.92    1.26    -46.92    -2.26R
263      21.0       87.00  43.34    1.68     43.66     2.11R
270      57.0       17.00  59.92    1.26    -42.92    -2.07R
288      72.0        6.00  66.83    1.58    -60.83    -2.94R
292      97.0       33.00  78.35    2.41    -45.35    -2.20R
298      17.0        0.00  41.50    1.80    -41.50    -2.00R

R denotes an observation with a large standardized residual.
```

Figure 11. Scatterplot and regression analysis of VIBI-FQ score versus level 1 assessment score for area within 100 meters of assessment boundary.



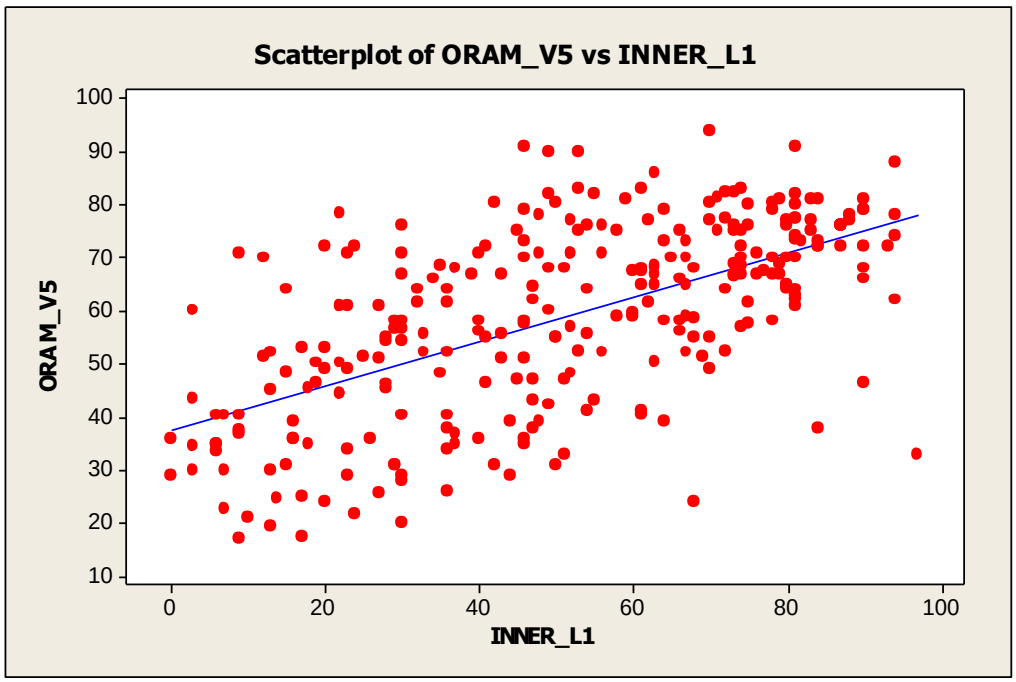

```
The regression equation is
VIBI_FQ = 22.9 + 0.575 INNER_L1

Predictor      Coef  SE Coef      T      P
Constant     22.928    2.630   8.72  0.000
INNER_L1    0.57527  0.04674  12.31  0.000

S = 20.4757   R-Sq = 33.9%   R-Sq(adj) = 33.6%

Analysis of Variance
Source            DF      SS     MS       F      P
Regression         1   63518  63518  151.50  0.000
Residual Error   296  124099    419
Total            297  187618

Unusual Observations
Obs  INNER_L1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 19      70.0    21.53  63.20    1.50    -41.67     -2.04R
 38      48.0    91.63  50.54    1.19     41.09      2.01R
 94      52.0   100.00  52.84    1.19     47.16      2.31R
121      40.0    90.45  45.94    1.28     44.51      2.18R
150      69.0    17.57  62.62    1.48    -45.05     -2.21R
156      23.0    97.53  36.16    1.74     61.37      3.01R
164      30.0   100.00  40.19    1.52     59.81      2.93R
180      49.0   100.00  51.12    1.19     48.88      2.39R
263      22.0    80.16  35.58    1.77     44.58      2.19R
288      68.0     6.92  62.05    1.45    -55.13     -2.70R
290      84.0    17.81  71.25    1.97    -53.44     -2.62R

R denotes an observation with a large standardized residual.
```

Figure 12. Scatterplot and regression analysis of VIBI-FQ score versus level 1 assessment score for area from 100 to 350 meters of assessment boundary.



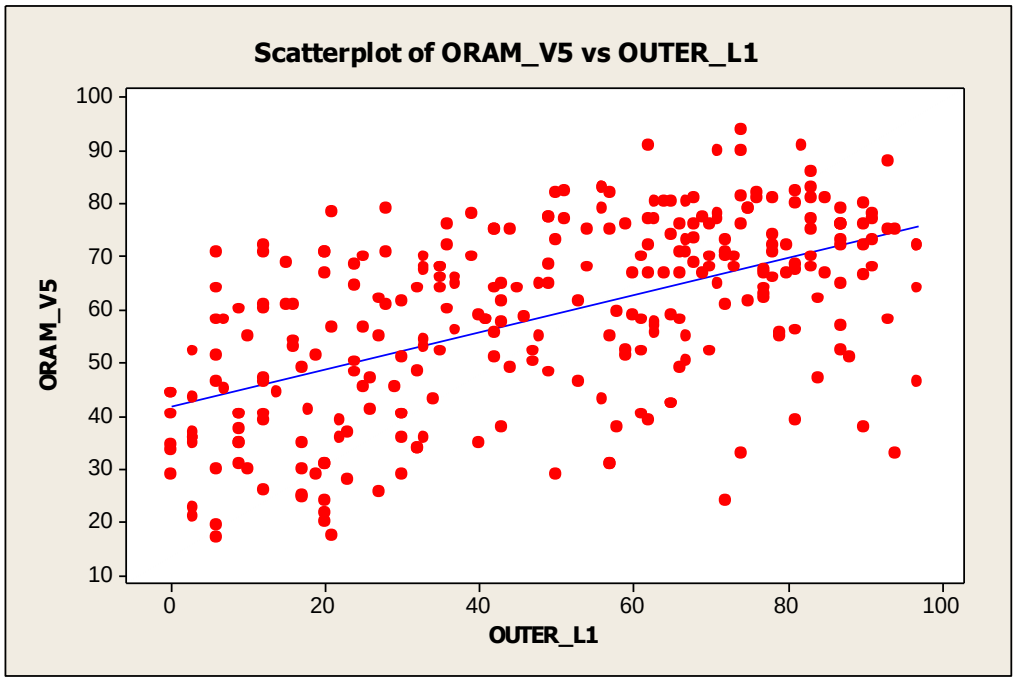

```
The regression equation is
VIBI_FQ = 30.1 + 0.451 OUTER_L1

Predictor      Coef  SE Coef      T      P
Constant     30.058    2.504  12.00  0.000
OUTER_L1    0.45104  0.04486  10.05  0.000

S = 21.7372   R-Sq = 25.5%   R-Sq(adj) = 25.2%

Analysis of Variance
Source            DF      SS     MS       F      P
Regression         1   47756  47756  101.07  0.000
Residual Error   296  139862    473
Total            297  187618

Unusual Observations
Obs  OUTER_L1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 38      39.0    91.63  47.65    1.33     43.98     2.03R
 89      51.0    96.84  53.06    1.27     43.78     2.02R
101      74.0    16.28  63.44    1.71    -47.15    -2.18R
121      37.0    90.45  46.75    1.36     43.70     2.01R
156      20.0    97.53  39.08    1.79     58.45     2.70R
164      36.0   100.00  46.30    1.37     53.70     2.48R
180      57.0   100.00  55.77    1.32     44.23     2.04R
288      72.0     6.92  62.53    1.65    -55.62    -2.57R
290      90.0    17.81  70.65    2.26    -52.84    -2.44R

R denotes an observation with a large standardized residual.
```

Figure 13. Scatterplot and regression analysis of ORAM score versus level 1 assessment score for area within 100 meters of assessment boundary.



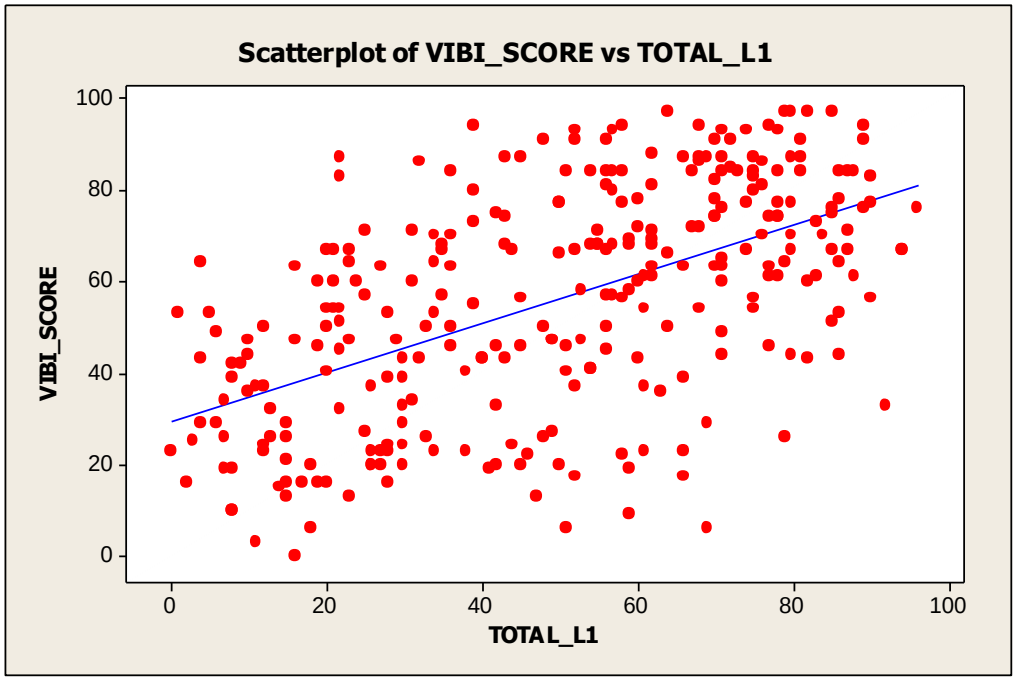

```
The regression equation is
ORAM_V5 = 37.6 + 0.419 INNER_L1

Predictor      Coef  SE Coef      T      P
Constant     37.568    1.823  20.61  0.000
INNER_L1    0.41900  0.03227  12.98  0.000

S = 13.8639   R-Sq = 36.8%   R-Sq(adj) = 36.6%

Analysis of Variance
Source            DF     SS     MS       F      P
Regression         1  32394  32394  168.54  0.000
Residual Error   289  55548    192
Total            290  87942

Unusual Observations
Obs  INNER_L1  ORAM_V5     Fit  SE Fit  Residual  St Resid
141      46.0   91.000  56.842   0.826    34.158     2.47R
144      53.0   90.000  59.775   0.817    30.225     2.18R
145      49.0   90.000  58.099   0.814    31.901     2.31R
231      97.0   33.000  78.210   1.705   -45.210    -3.29R
254       9.0   71.000  41.339   1.568    29.661     2.15R
258      30.0   20.000  50.138   1.049   -30.138    -2.18R
259      22.0   78.500  46.786   1.229    31.714     2.30R
284      68.0   24.000  66.060   0.989   -42.060    -3.04R
286      84.0   38.000  72.764   1.351   -34.764    -2.52R
288      90.0   46.500  75.278   1.510   -28.778    -2.09R

R denotes an observation with a large standardized residual.
```

Figure 14. Scatterplot and regression analysis of ORAM score versus level 1 assessment score for area from 100 to 350 meters of assessment boundary.



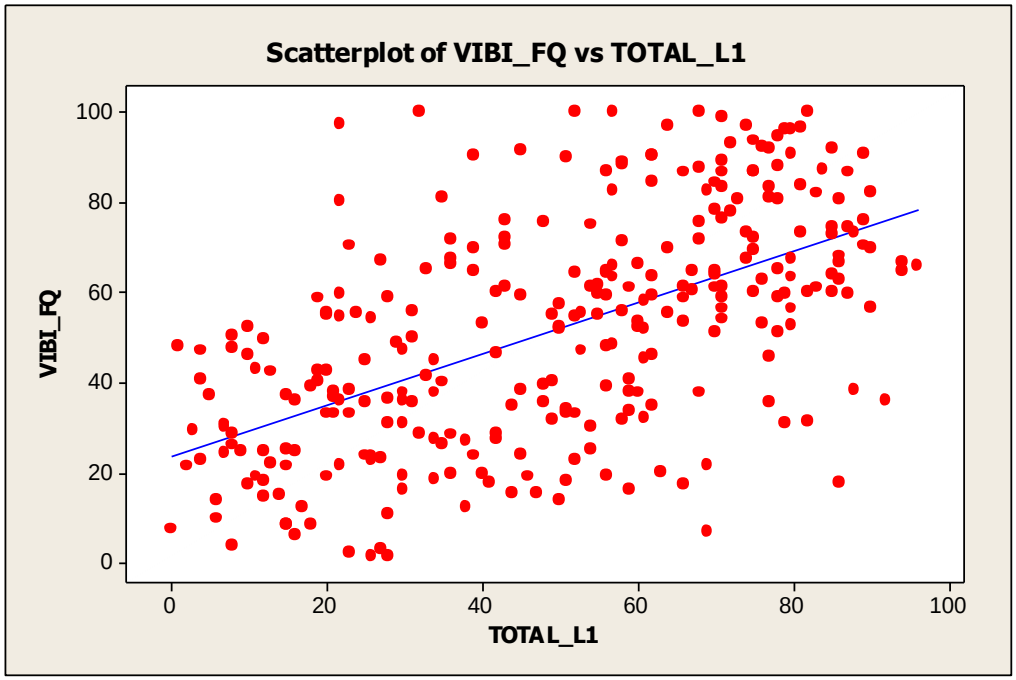

```
The regression equation is
ORAM_V5 = 41.7 + 0.350 OUTER_L1

Predictor     Coef  SE Coef      T      P
Constant    41.746    1.694  24.64  0.000
OUTER_L1   0.35009  0.03023  11.58  0.000

S = 14.4172   R-Sq = 31.7%   R-Sq(adj) = 31.5%

Analysis of Variance
Source            DF     SS     MS       F      P
Regression         1  27872  27872  134.10  0.000
Residual Error   289  60070    208
Total            290  87942

Unusual Observations
Obs  OUTER_L1  ORAM_V5     Fit  SE Fit  Residual  St Resid
101      74.0   33.000  67.652   1.142   -34.652    -2.41R
128      81.0   39.000  70.103   1.294   -31.103    -2.17R
159      21.0   17.500  49.097   1.187   -31.597    -2.20R
214      57.0   31.000  61.701   0.883   -30.701    -2.13R
231      94.0   33.000  74.654   1.613   -41.654    -2.91R
258      20.0   20.000  48.747   1.209   -28.747    -2.00R
259      21.0   78.500  49.097   1.187    29.403     2.05R
266      57.0   31.000  61.701   0.883   -30.701    -2.13R
271      50.0   29.000  59.250   0.846   -30.250    -2.10R
284      72.0   24.000  66.952   1.103   -42.952    -2.99R
286      90.0   38.000  73.254   1.511   -35.254    -2.46R
288      97.0   46.500  75.704   1.690   -29.204    -2.04R

R denotes an observation with a large standardized residual.
```

Figure 15. Scatterplot and regression analysis of VIBI score versus total level 1 assessment score.



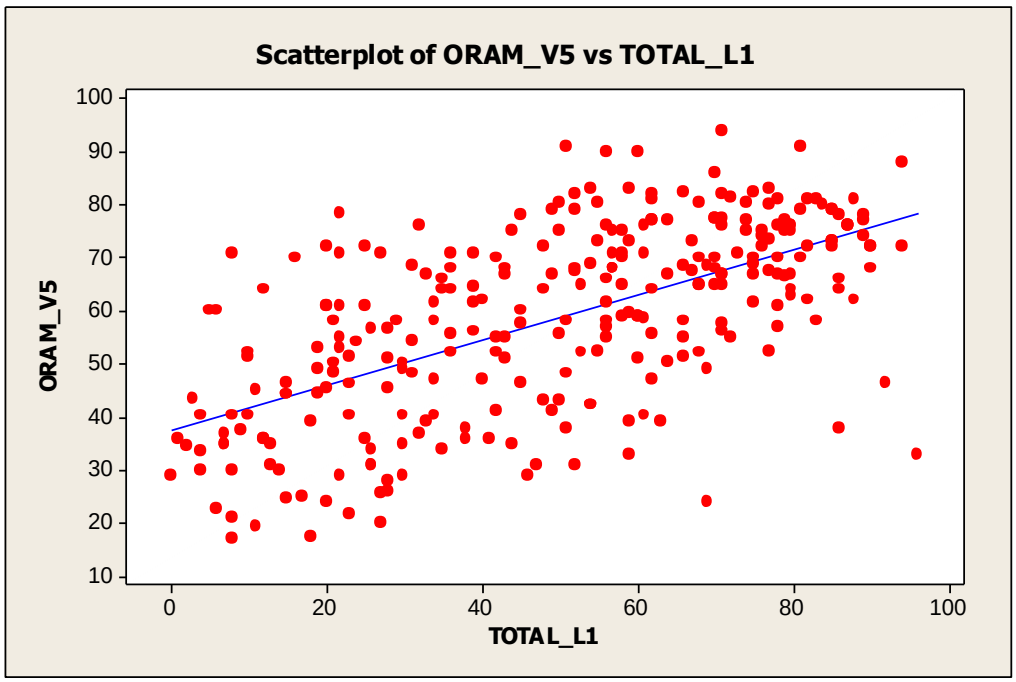

```
The regression equation is
VIBI_SCORE = 29.2 + 0.539 TOTAL_L1

Predictor      Coef  SE Coef      T      P
Constant     29.182    2.595  11.25  0.000
TOTAL_L1    0.53870  0.04663  11.55  0.000

S = 20.3376   R-Sq = 31.1%   R-Sq(adj) = 30.8%

Analysis of Variance
Source            DF      SS     MS       F      P
Regression         1   55204  55204  133.47  0.000
Residual Error   296  122431    414
Total            297  177635

Unusual Observations
Obs  TOTAL_L1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 40      79.0       26.00  71.74    1.81    -45.74    -2.26R
101      59.0        9.00  60.97    1.26    -51.97    -2.56R
121      39.0       94.00  50.19    1.28     43.81     2.16R
150      66.0       17.00  64.74    1.41    -47.74    -2.35R
156      22.0       83.00  41.03    1.74     41.97     2.07R
189      51.0        6.00  56.66    1.18    -50.66    -2.49R
214      47.0       13.00  54.50    1.18    -41.50    -2.04R
263      22.0       87.00  41.03    1.74     45.97     2.27R
276      59.0       19.00  60.97    1.26    -41.97    -2.07R
278      66.0       23.00  64.74    1.41    -41.74    -2.06R
288      69.0        6.00  66.35    1.49    -60.35    -2.98R
292      92.0       33.00  78.74    2.30    -45.74    -2.26R

R denotes an observation with a large standardized residual.
```

Figure 16. Scatterplot and regression analysis of VIBI-FQ score versus total level 1 assessment score.



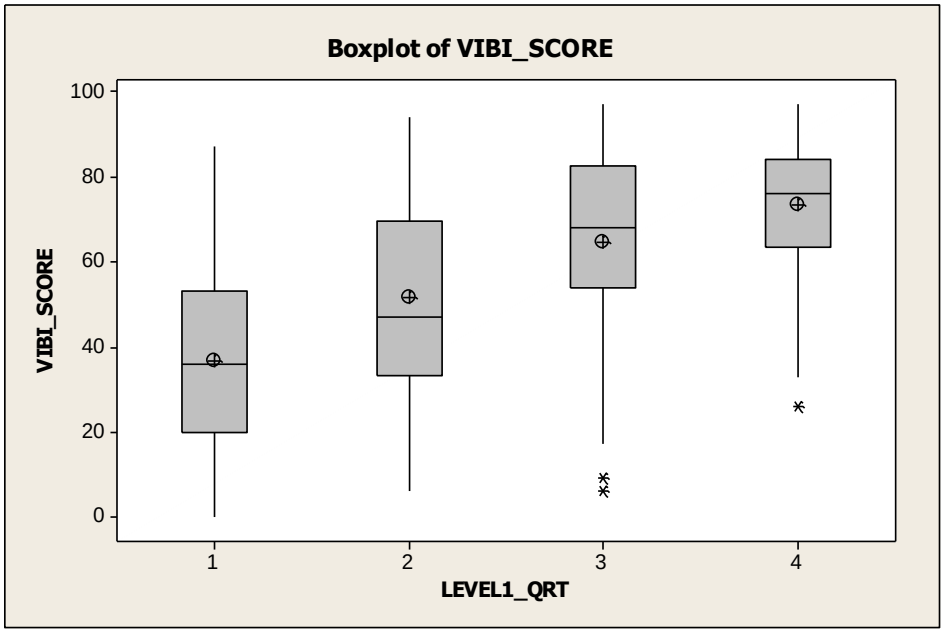

```
The regression equation is
VIBI_FQ = 23.5 + 0.572 TOTAL_L1

Predictor      Coef  SE Coef      T      P
Constant     23.457    2.626   8.93  0.000
TOTAL_L1    0.57206  0.04718  12.12  0.000

S = 20.5797   R-Sq = 33.2%   R-Sq(adj) = 33.0%

Analysis of Variance
Source            DF      SS     MS       F      P
Regression         1   62254  62254  146.99  0.000
Residual Error   296  125363    424
Total            297  187618

Unusual Observations
Obs  TOTAL_L1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 19      69.0    21.53  62.93    1.50    -41.40     -2.02R
 38      45.0    91.63  49.20    1.21     42.43      2.07R
 94      57.0   100.00  56.07    1.24     43.93      2.14R
121      39.0    90.45  45.77    1.29     44.68      2.18R
150      66.0    17.57  61.21    1.42    -43.65     -2.13R
156      22.0    97.53  36.04    1.76     61.48      3.00R
164      32.0   100.00  41.76    1.45     58.24      2.84R
180      52.0   100.00  53.20    1.20     46.80      2.28R
263      22.0    80.16  36.04    1.76     44.12      2.15R
288      69.0     6.92  62.93    1.50    -56.01     -2.73R
290      86.0    17.81  72.65    2.09    -54.85     -2.68R

R denotes an observation with a large standardized residual.
```

Figure 17. Scatterplot and regression analysis of ORAM score versus total level 1 assessment score.



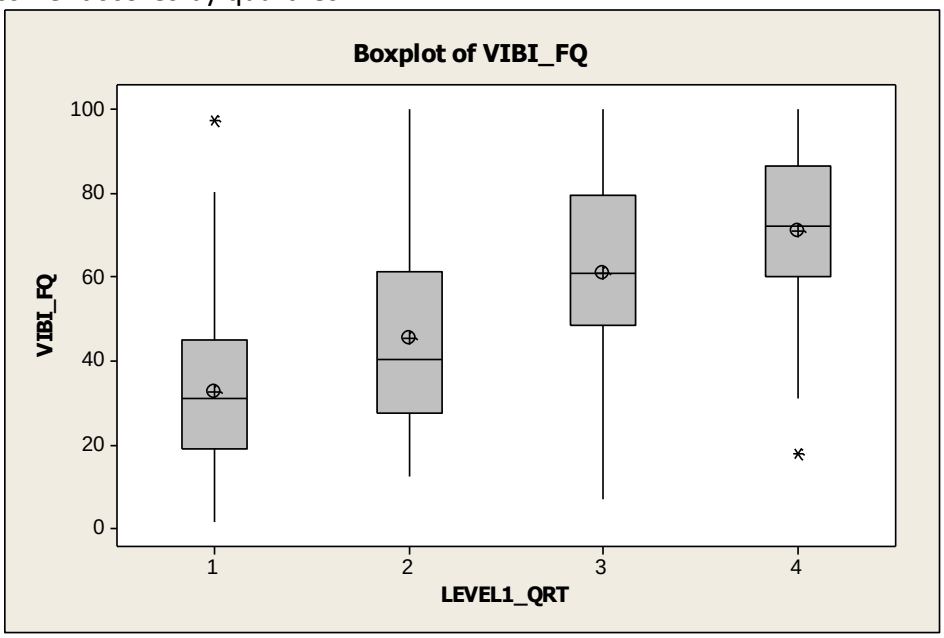

```
The regression equation is
ORAM_V5 = 37.5 + 0.426 TOTAL_L1

Predictor     Coef  SE Coef      T      P
Constant    37.470    1.796  20.86  0.000
TOTAL_L1   0.42639  0.03215  13.26  0.000

S = 13.7545   R-Sq = 37.8%   R-Sq(adj) = 37.6%

Analysis of Variance
Source            DF     SS     MS       F      P
Regression         1  33267  33267  175.84  0.000
Residual Error   289  54675    189
Total            290  87942

Unusual Observations
Obs  TOTAL_L1  ORAM_V5     Fit  SE Fit  Residual  St Resid
101      59.0   33.000  62.626   0.858   -29.626    -2.16R
141      51.0   91.000  59.215   0.807    31.785     2.31R
145      56.0   90.000  61.347   0.830    28.653     2.09R
159      18.0   17.500  45.145   1.305   -27.645    -2.02R
231      96.0   33.000  78.403   1.687   -45.403    -3.33R
254       8.0   71.000  40.881   1.570    30.119     2.20R
258      27.0   20.000  48.982   1.092   -28.982    -2.11R
259      22.0   78.500  46.850   1.206    31.650     2.31R
266      52.0   31.000  59.642   0.809   -28.642    -2.09R
271      46.0   29.000  57.083   0.816   -28.083    -2.05R
284      69.0   24.000  66.890   1.013   -42.890    -3.13R
286      86.0   38.000  74.139   1.413   -36.139    -2.64R
288      92.0   46.500  76.697   1.575   -30.197    -2.21R

R denotes an observation with a large standardized residual.
```

Figure 18. Boxplot and one-way ANOVA (with Tukey's comparison) of VIBI score versus total level 1 assessment scores by quartiles.



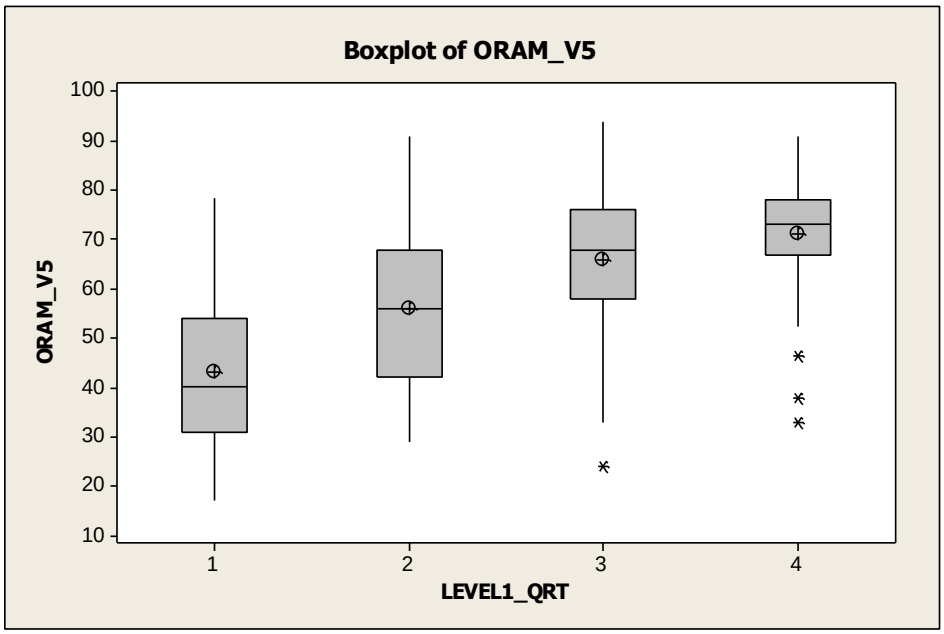

```
Source        DF      SS     MS      F      P
LEVEL1_QRT     3   56567  18856  45.79  0.000
Error        294  121069    412
Total        297  177635

S = 20.29   R-Sq = 31.84%   R-Sq(adj) = 31.15%
                          Individual 95% CIs For Mean Based on
                          Pooled StDev
Level   N   Mean  StDev  ---+---------+---------+---------+------
1      79  36.77  19.49  (---*--)
2      76  51.57  22.81             (---*---)
3      74  64.61  21.91                       (---*---)
4      69  73.19  15.97                             (---*---)
                          ---+---------+---------+---------+------
                            36        48        60        72
Pooled StDev = 20.29
Grouping Information Using Tukey Method

LEVEL1_QRT   N   Mean  Grouping
4           69  73.19  A
3           74  64.61  A
2           76  51.57    B
1           79  36.77      C

Means that do not share a letter are significantly different.

Tukey 95% Simultaneous Confidence Intervals
All Pairwise Comparisons among Levels of LEVEL1_QRT

Individual confidence level = 98.92%

LEVEL1_QRT = 1 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  -----+---------+---------+---------+----
2            6.42   14.79  23.16                   (---*----)
3           19.41   27.84  36.26                          (---*---)
4           27.83   36.42  45.00                              (---*---)
                                  -----+---------+---------+---------+----
                                     -20         0        20        40
LEVEL1_QRT = 2 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  -----+---------+---------+---------+----
3            4.54   13.04  21.55                  (----*---)
4           12.96   21.62  30.28                      (----*---)
                                  -----+---------+---------+---------+----
                                     -20         0        20        40

LEVEL1_QRT = 3 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  -----+---------+---------+---------+----
4           -0.14    8.58  17.30                (---*----)
                                  -----+---------+---------+---------+----
                                     -20         0        20        40
```

Figure 19. Boxplot and one-way ANOVA (with Tukey's comparison) of VIBI-FQ score versus total level 1 assessment scores by quartiles.




```
Source        DF      SS     MS      F      P
LEVEL1_QRT     3   63799  21266  50.50  0.000
Error        294  123819    421
Total        297  187618

S = 20.52   R-Sq = 34.00%   R-Sq(adj) = 33.33%

                          Individual 95% CIs For Mean Based on
                          Pooled StDev
Level   N   Mean  StDev  -------+---------+---------+---------+--
1      79  32.60  19.14  (---*---)
2      76  45.50  22.47             (---*---)
3      74  60.92  21.90                          (---*---)
4      69  71.02  18.13                                   (---*---)
                          -------+---------+---------+---------+--
                                36        48        60        72
Pooled StDev = 20.52

Grouping Information Using Tukey Method

LEVEL1_QRT   N   Mean  Grouping
4           69  71.02  A
3           74  60.92    B
2           76  45.50      C
1           79  32.60        D

Means that do not share a letter are significantly different.

Tukey 95% Simultaneous Confidence Intervals
All Pairwise Comparisons among Levels of LEVEL1_QRT

Individual confidence level = 98.92%

LEVEL1_QRT = 1 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  ----+---------+---------+---------+-----
2            4.43   12.90  21.36                  (--*---)
3           19.80   28.32  36.84                        (--*---)
4           29.74   38.42  47.10                            (--*---)
                                  ----+---------+---------+---------+-----
                                    -25         0        25        50

LEVEL1_QRT = 2 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  ----+---------+---------+---------+-----
3            6.82   15.42  24.03                   (--*---)
4           16.77   25.53  34.28                       (--*---)
                                  ----+---------+---------+---------+-----
                                    -25         0        25        50
LEVEL1_QRT = 3 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  ----+---------+---------+---------+-----
4            1.29   10.10  18.92                 (--*---)
                                  ----+---------+---------+---------+-----
                                    -25         0        25        50
```

Figure 20. Boxplot and one-way ANOVA (with Tukey's comparison) of ORAM score versus total level 1 assessment scores by quartiles.




```
Source        DF     SS     MS      F      P
LEVEL1_QRT     3  32987  10996  57.42  0.000
Error        287  54955    191
Total        290  87942

S = 13.84   R-Sq = 37.51%   R-Sq(adj) = 36.86%

                          Individual 95% CIs For Mean Based on
                          Pooled StDev
Level   N   Mean  StDev   +---------+---------+---------+---------
1      75  43.13  15.40   (--*--)
2      75  56.14  15.17                 (--*--)
3      74  66.01  13.49                           (--*--)
4      67  71.14  10.38                                (--*--)
                          +---------+---------+---------+---------
                          40        50        60        70
Pooled StDev = 13.84

Grouping Information Using Tukey Method
LEVEL1_QRT   N   Mean  Grouping
4           67  71.14  A
3           74  66.01  A
2           75  56.14    B
1           75  43.13      C

Means that do not share a letter are significantly different.

Tukey 95% Simultaneous Confidence Intervals
All Pairwise Comparisons among Levels of LEVEL1_QRT

Individual confidence level = 98.92%

LEVEL1_QRT = 1 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  ----+---------+---------+---------+-----
2            7.21   13.01  18.81                     (---*---)
3           17.05   22.87  28.69                           (---*---)
4           22.04   28.01  33.98                               (---*---)
                                  ----+---------+---------+---------+-----
                                    -15         0        15        30
LEVEL1_QRT = 2 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  ----+---------+---------+---------+-----
3            4.05    9.87  15.69                   (---*--)
4            9.03   15.00  20.97                      (---*---)
                                  ----+---------+---------+---------+-----
                                    -15         0        15        30
LEVEL1_QRT = 3 subtracted from:
LEVEL1_QRT  Lower  Center  Upper  ----+---------+---------+---------+-----
4           -0.85    5.14  11.12               (---*---)
                                  ----+---------+---------+---------+-----
                                    -15         0        15        30
```

Figure 21. All HUC 12 watersheds in Ohio symbolized by area-weighted Level 1 wetland condition score for all NWI wetlands occurring within each watershed.

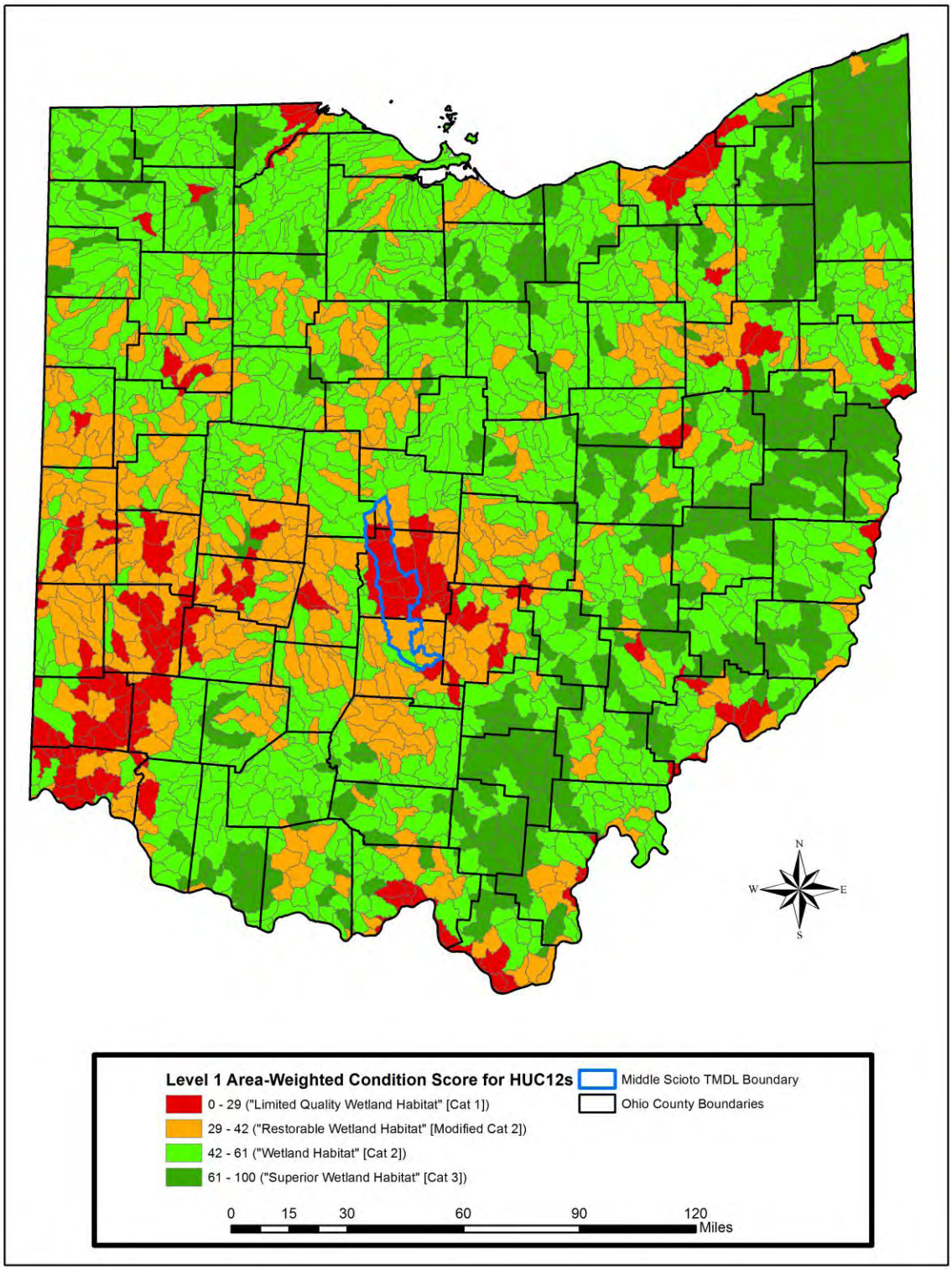


Figure 22. Bar graph displaying the number of HUC12 watersheds (level 1 and level 2 characterization) and the number of field ORAM assessments for the Middle Scioto TMDL study area falling into each of the proposed wetland tiered aquatic life use categories ("limited quality wetland habitat" [category 1, or "poor" condition], "restorable wetland habitat" [modified category 2, or "fair" condition],"wetland habitat" [category 2, or "good" condition], "superior wetland habitat" [category 3, or "excellent" condition].

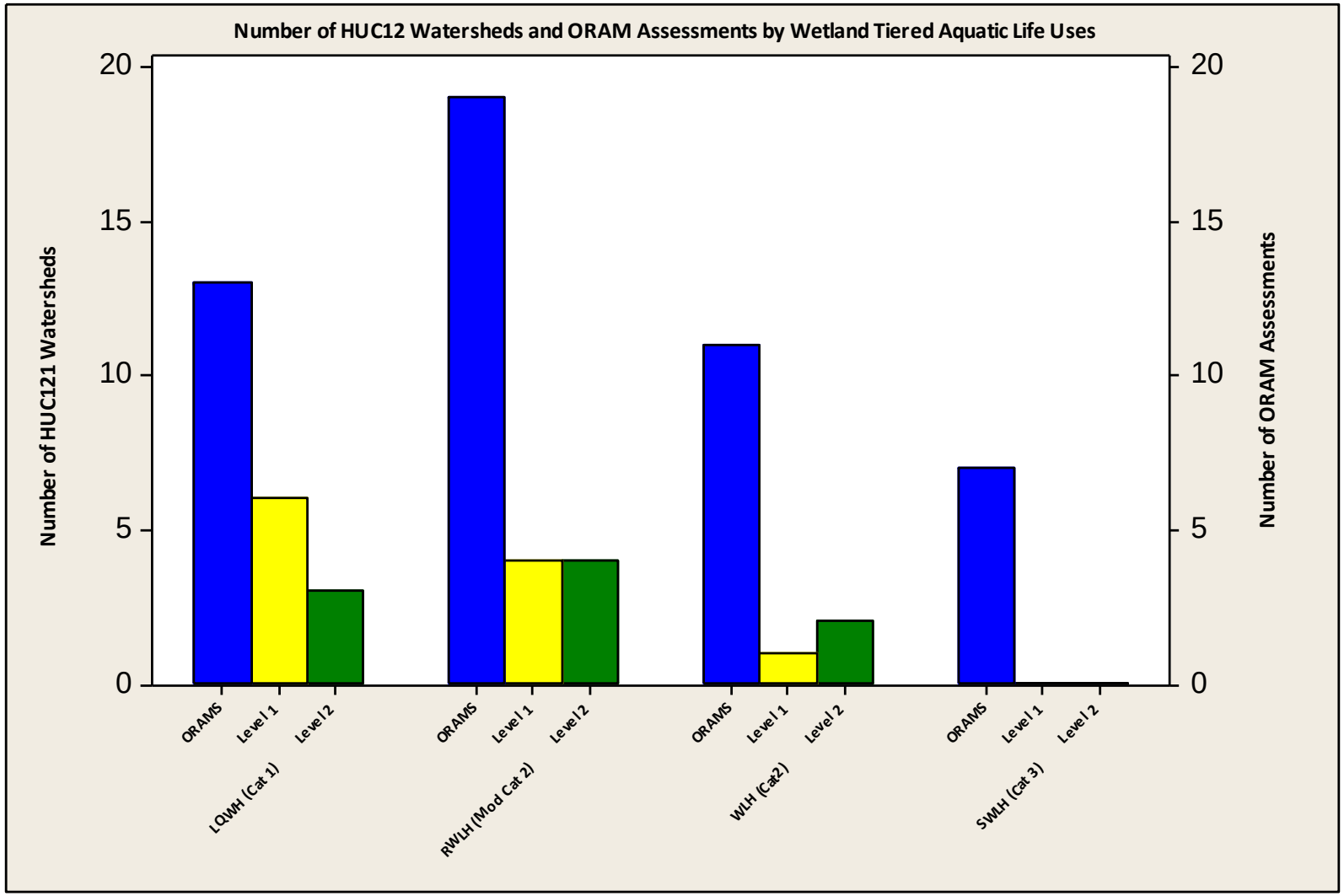
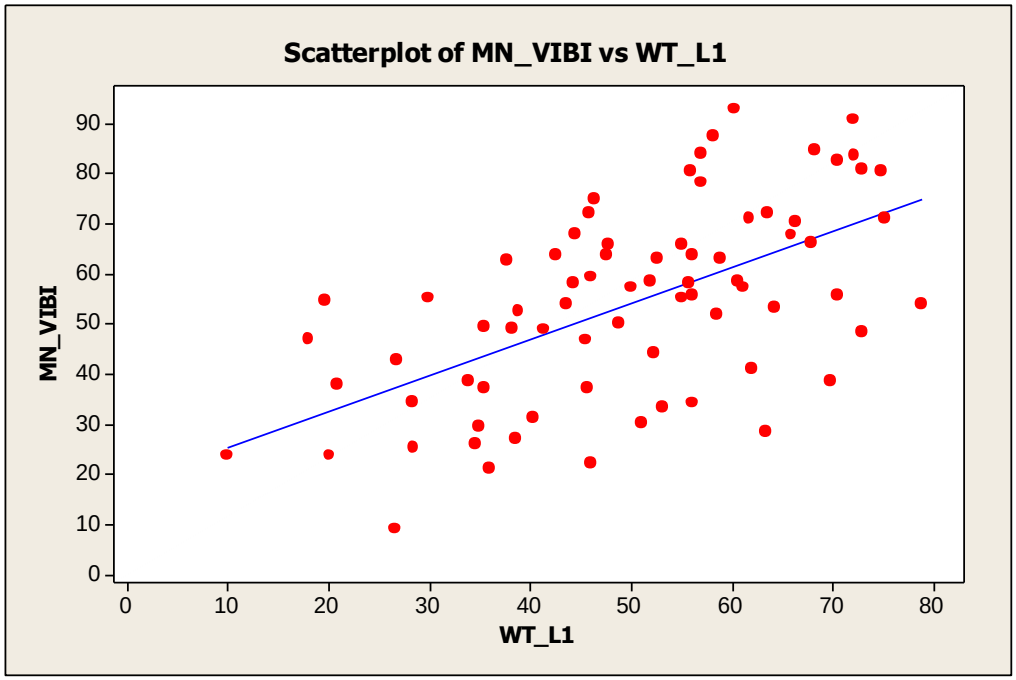
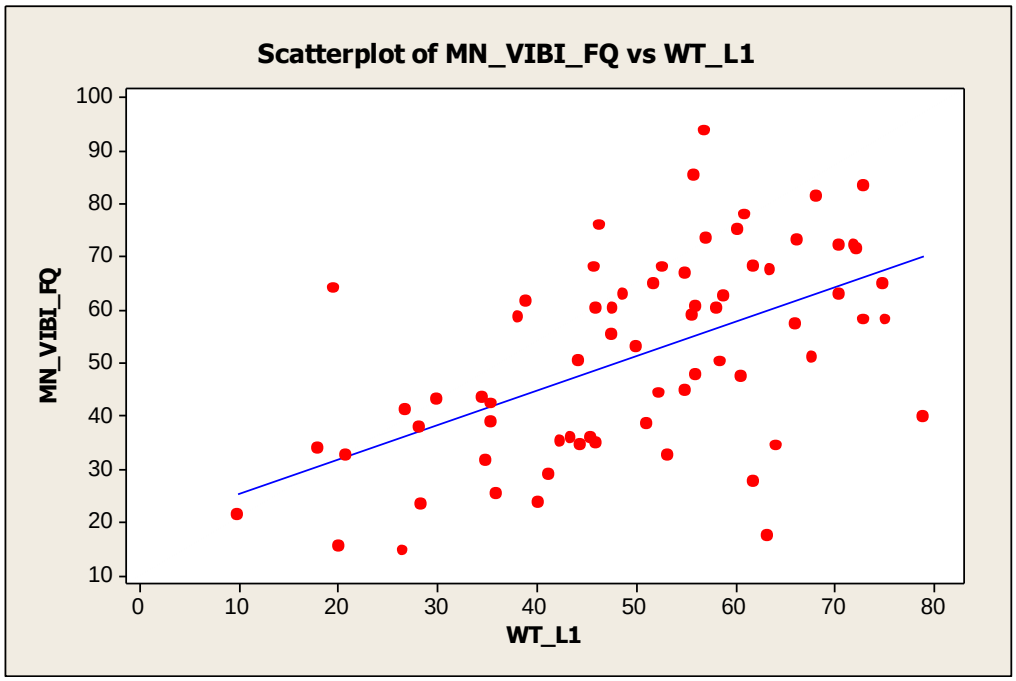


Figure 23. Scatterplot and regression analysis of area-weighted NWI level 1 assessment score versus mean VIBI score for all HUC12 watersheds having at least 2 field assessments conducted by the Ohio EPA Wetland Ecology Group.



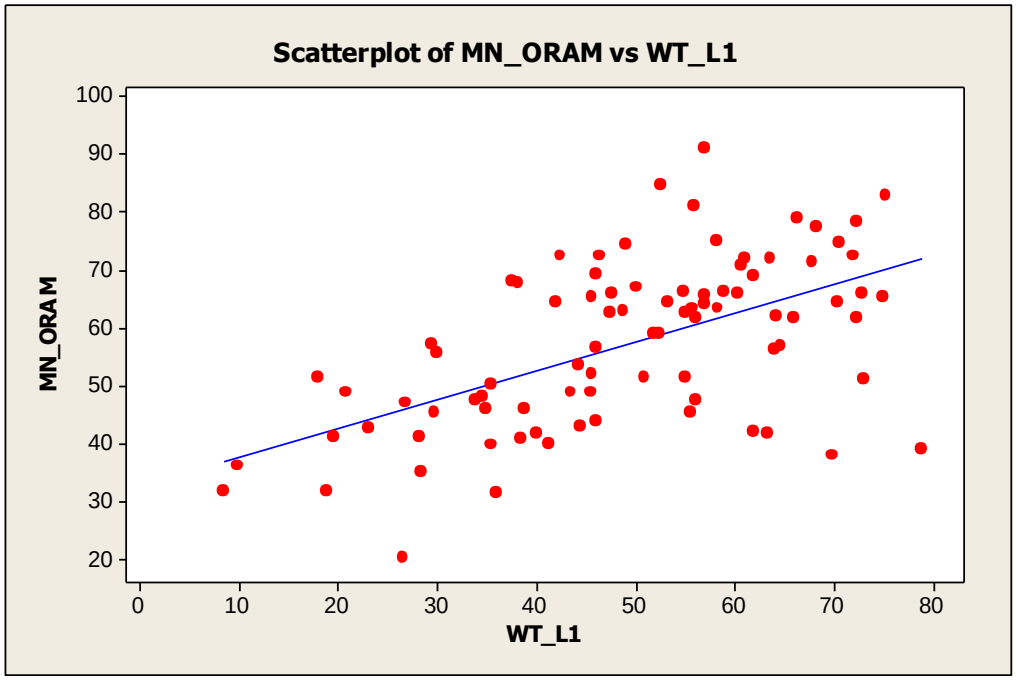

```
The regression equation is
MN_VIBI = 18.2 + 0.720 WT_L1

Predictor     Coef  SE Coef      T      P
Constant    18.199    6.049   3.01  0.004
WT_L1       0.7200   0.1153   6.24  0.000

S = 15.6313   R-Sq = 34.8%   R-Sq(adj) = 33.9%

Analysis of Variance
Source          DF       SS      MS      F      P
Regression       1   9519.7  9519.7  38.96  0.000
Residual Error  73  17836.5   244.3
Total           74  27356.2

Unusual Observations
Obs  WT_L1  MN_VIBI    Fit  SE Fit  Residual  St Resid
 26   63.3    28.50  63.78    2.37    -35.28     -2.28R
 51    9.9    23.50  25.32    4.97     -1.82     -0.12 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure 24. Scatterplot and regression analysis of area-weighted NWI level 1 assessment score versus mean VIBI-FQ score for all HUC12 watersheds having at least 2 field assessments conducted by the Ohio EPA Wetland Ecology Group.




```
The regression equation is
MN_VIBI_FQ = 18.9 + 0.645 WT_L1

Predictor     Coef  SE Coef      T      P
Constant    18.947    6.309   3.00  0.004
WT_L1       0.6450   0.1196   5.39  0.000

S = 15.7565   R-Sq = 30.3%   R-Sq(adj) = 29.2%

Analysis of Variance
Source           DF       SS       MS      F      P
Regression        1   7224.7   7224.7  29.10  0.000
Residual Error   67  16633.9    248.3
Total            68  23858.6

Unusual Observations
Obs  WT_L1  MN_VIBI_FQ    Fit  SE Fit  Residual  St Resid
  2   56.9       93.33  55.66    2.05     37.67     2.41R
 26   63.3       17.38  59.78    2.45    -42.40    -2.72R
 39   61.9       27.53  58.89    2.35    -31.36    -2.01R
 49    9.9       21.39  25.32    5.19     -3.94    -0.26 X
 50   19.5       63.61  31.55    4.14     32.06     2.11R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure 25. Scatterplot and regression analysis of area-weighted NWI level 1 assessment score versus mean ORAM score for all HUC12 watersheds having at least 2 field assessments conducted by the Ohio EPA Wetland Ecology Group.

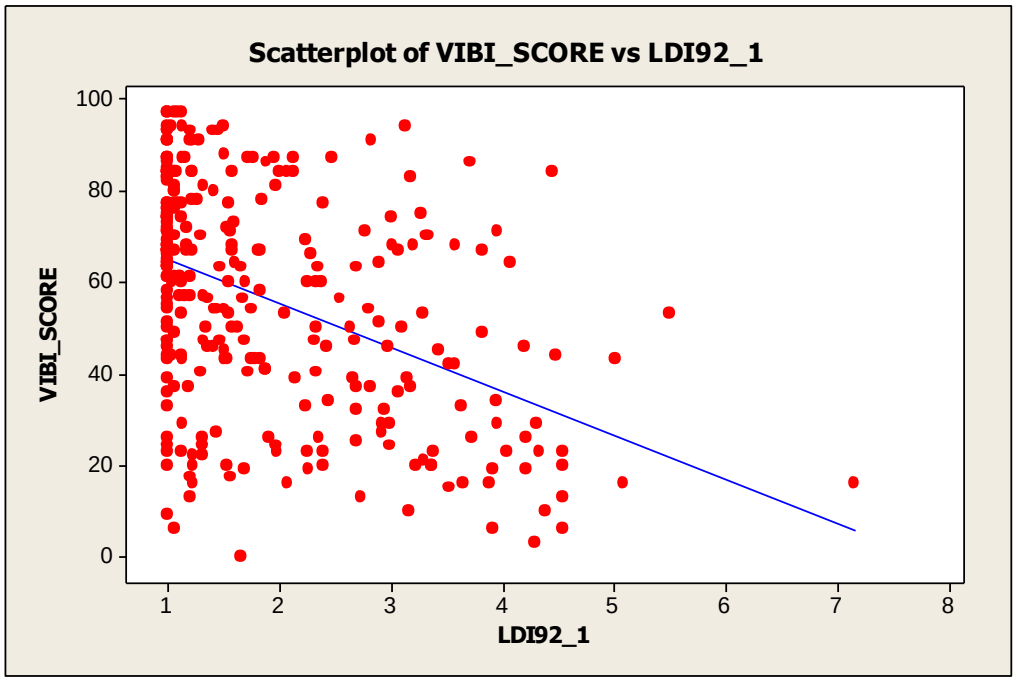



```
The regression equation is
MN_ORAM = 32.7 + 0.501 WT_L1

Predictor      Coef  SE Coef     T      P
Constant     32.658    4.068  8.03  0.000
WT_L1       0.50126  0.07833  6.40  0.000

S = 11.8119   R-Sq = 32.5%   R-Sq(adj) = 31.7%

Analysis of Variance
Source           DF       SS      MS      F      P
Regression        1   5713.0  5713.0  40.95  0.000
Residual Error   85  11859.3   139.5
Total            86  17572.3

Unusual Observations
Obs  WT_L1  MN_ORAM    Fit  SE Fit  Residual  St Resid
  3   56.9    91.00  61.19    1.40     29.81     2.54R
 18   78.9    39.17  72.20    2.64    -33.03    -2.87R
 44   52.6    84.67  59.04    1.29     25.63     2.18R
 53   69.8    37.75  67.64    2.04    -29.89    -2.57R
 58    9.9    36.00  37.61    3.34     -1.61    -0.14 X
 75   26.6    20.30  46.00    2.19    -25.70    -2.21R
 76    8.5    31.86  36.94    3.44     -5.08    -0.45 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Appendix 1

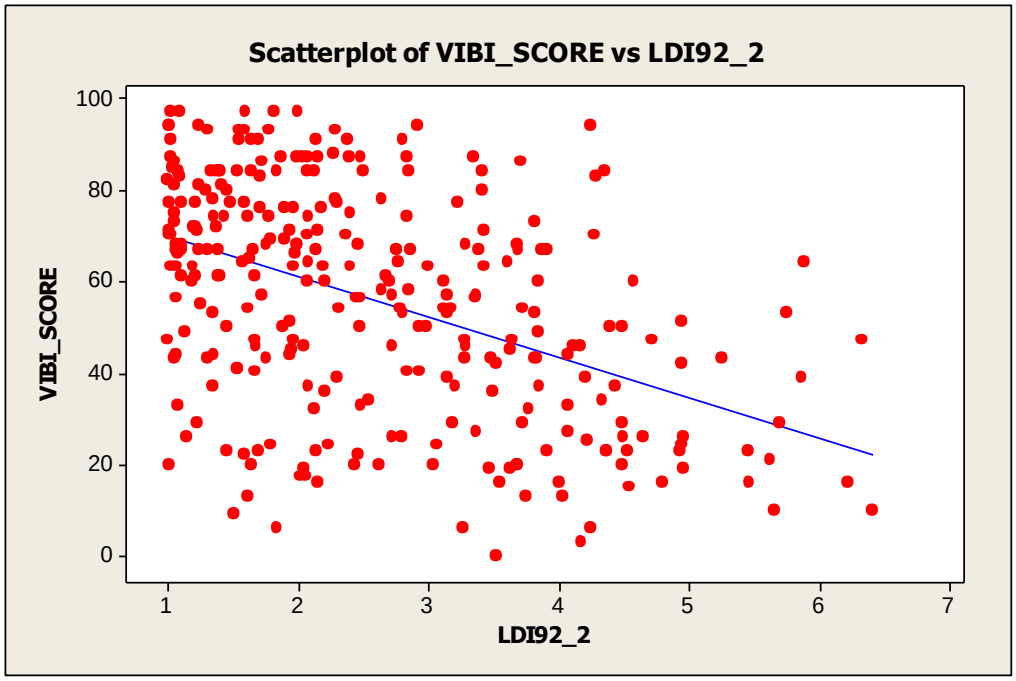
Scatterplots and regression analysis for parameters tested in the development of the Level 1 assessment tool

Figure A1. Scatterplot and regression analysis of VIBI score versus 1992 LDI for area within 100 meters of assessment boundary.



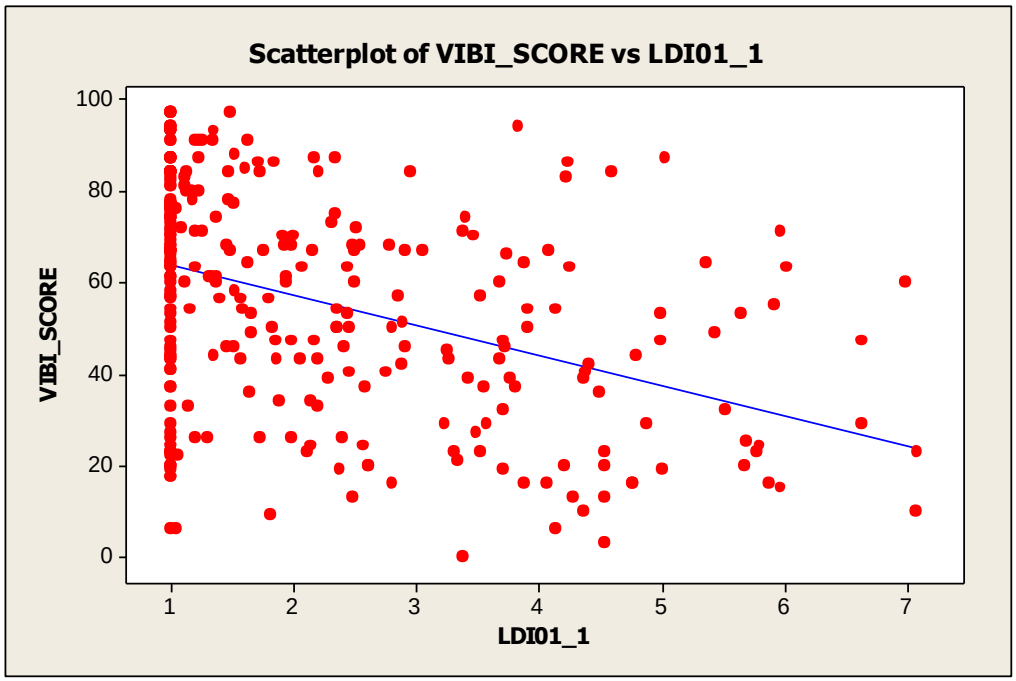

```
The regression equation is
VIBI_SCORE = 74.4 - 9.59 LDI92_1

Predictor     Coef  SE Coef      T      P
Constant    74.423    2.574  28.91  0.000
LDI92_1     -9.588    1.156  -8.29  0.000

S = 22.0665   R-Sq = 18.9%   R-Sq(adj) = 18.6%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   33504  33504  68.81  0.000
Residual Error   296  144132    487
Total            297  177635

Unusual Observations
Obs  LDI92_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  7     1.00       20.00  64.84    1.67    -44.84     -2.04R
 56     4.44       84.00  31.81    3.17     52.19      2.39RX
101     1.00        9.00  64.84    1.67    -55.84     -2.54R
121     3.14       94.00  44.34    1.89     49.66      2.26R
133     1.24       16.00  62.52    1.51    -46.52     -2.11R
150     1.21       17.00  62.80    1.53    -45.80     -2.08R
164     3.72       86.00  38.77    2.43     47.23      2.15R
185     5.02       43.00  26.31    3.79     16.69      0.77 X
187     5.08       16.00  25.67    3.86     -9.67     -0.45 X
189     4.54        6.00  30.89    3.27    -24.89     -1.14 X
214     1.21       13.00  62.80    1.53    -49.80     -2.26R
224     5.50       53.00  21.73    4.31     31.27      1.44 X
257     4.54       20.00  30.89    3.27    -10.89     -0.50 X
273     4.54       13.00  30.89    3.27    -17.89     -0.82 X
274     4.48       44.00  31.44    3.21     12.56      0.58 X
284     4.54       23.00  30.89    3.27     -7.89     -0.36 X
288     1.07        6.00  64.19    1.62    -58.19     -2.64R
291     7.16       16.00   5.79    6.17     10.21      0.48 X
298     1.67        0.00  58.43    1.31    -58.43     -2.65R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A2. Scatterplot and regression analysis of VIBI score versus 1992 LDI for area from 100 to 350 meters of assessment boundary.



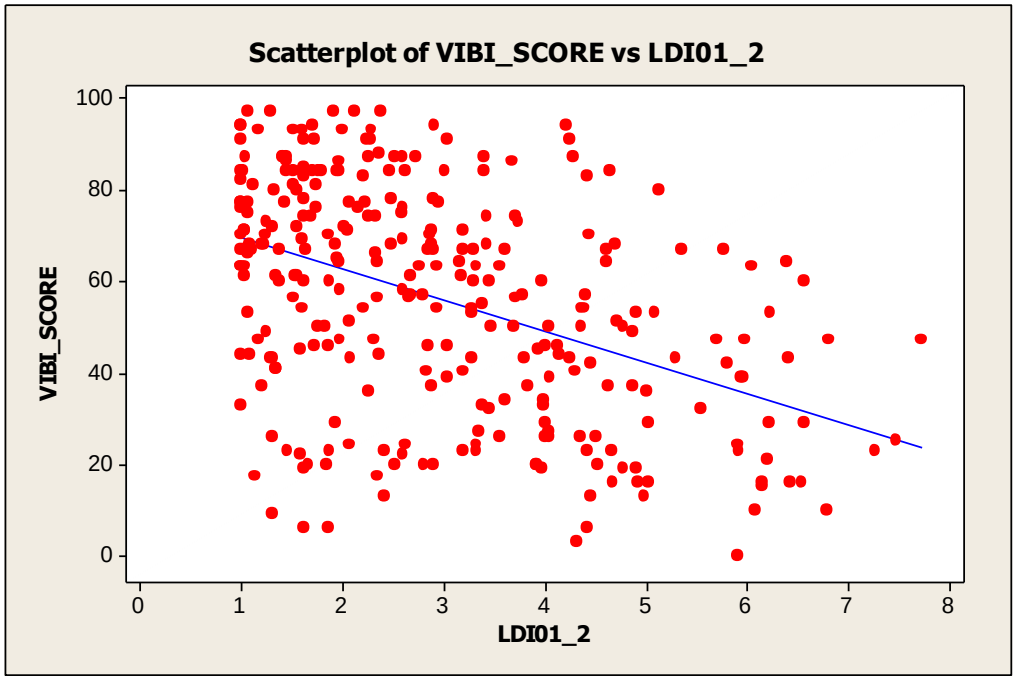

```
The regression equation is
VIBI_SCORE = 78.8 - 8.86 LDI92_2

Predictor      Coef  SE Coef      T      P
Constant     78.820    2.831  27.84  0.000
LDI92_2     -8.8642   0.9807  -9.04  0.000

S = 21.6865   R-Sq = 21.6%   R-Sq(adj) = 21.4%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   38425  38425  81.70  0.000
Residual Error   296  139210    470
Total            297  177635

Unusual Observations
Obs  LDI92_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  3     5.88       39.00  26.73    3.46     12.27     0.57 X
 31     5.66       10.00  28.67    3.26    -18.67    -0.87 X
 55     1.64       20.00  64.30    1.56    -44.30    -2.05R
 56     4.35       84.00  40.27    2.14     43.73     2.03R
101     1.51        9.00  65.47    1.64    -56.47    -2.61R
121     4.24       94.00  41.20    2.05     52.80     2.45R
133     2.15       16.00  59.77    1.33    -43.77    -2.02R
143     6.42       10.00  21.95    3.96    -11.95    -0.56 X
150     2.01       17.00  60.96    1.38    -43.96    -2.03R
163     1.01       20.00  69.89    1.99    -49.89    -2.31R
187     5.47       16.00  30.34    3.09    -14.34    -0.67 X
189     3.27        6.00  49.83    1.42    -43.83    -2.03R
214     1.61       13.00  64.55    1.58    -51.55    -2.38R
224     5.75       53.00  27.87    3.35     25.13     1.17 X
232     5.45       23.00  30.49    3.08     -7.49    -0.35 X
235     6.33       47.00  22.67    3.88     24.33     1.14 X
237     5.70       29.00  28.27    3.30      0.73     0.03 X
238     5.63       21.00  28.88    3.24     -7.88    -0.37 X
270     2.06       17.00  60.57    1.36    -43.57    -2.01R
283     5.89       64.00  26.61    3.47     37.39     1.75 X
288     1.85        6.00  62.42    1.45    -56.42    -2.61R
291     6.22       16.00  23.66    3.78     -7.66    -0.36 X
298     3.52        0.00  47.64    1.55    -47.64    -2.20R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A3. Scatterplot and regression analysis of VIBI score versus 2001 LDI for area within 100 meters of assessment boundary.



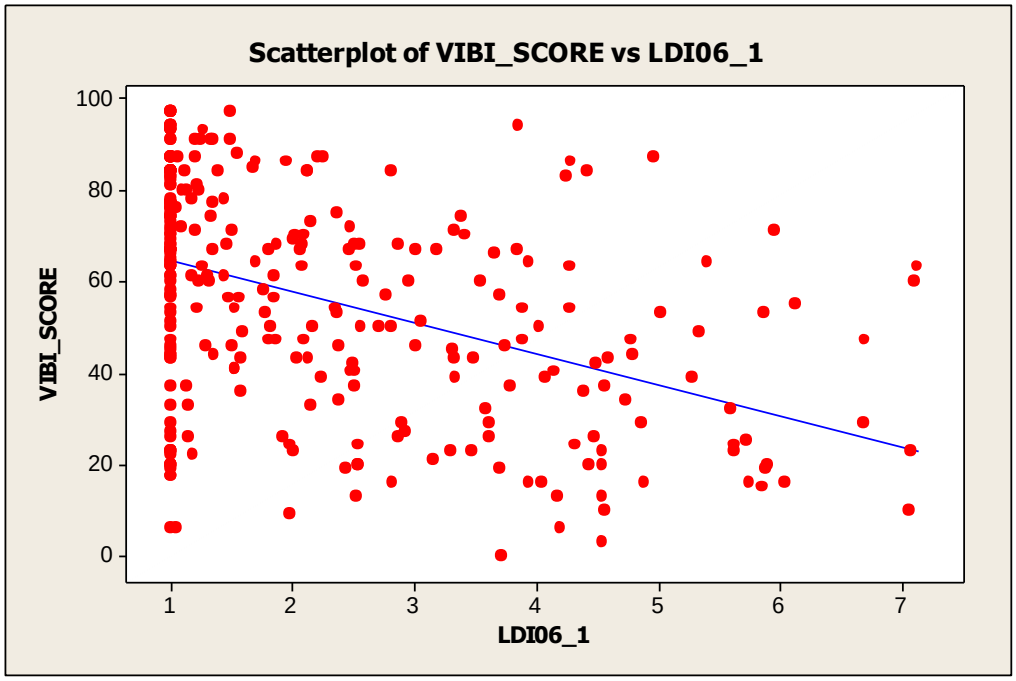

```
The regression equation is
VIBI_SCORE = 70.6 - 6.60 LDI01_1

Predictor      Coef  SE Coef      T      P
Constant     70.559    2.306  30.60  0.000
LDI01_1     -6.6011   0.8582  -7.69  0.000

S = 22.3639   R-Sq = 16.7%   R-Sq(adj) = 16.4%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   29593  29593  59.17  0.000
Residual Error   296  148043    500
Total            297  177635

Unusual Observations
Obs  LDI01_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  1     6.99       60.00  24.44    4.29     35.56     1.62 X
 11     6.02       63.00  30.83    3.51     32.17     1.46 X
 25     5.98       15.00  31.09    3.47    -16.09    -0.73 X
 60     5.91       55.00  31.51    3.42     23.49     1.06 X
 68     5.69       25.00  33.01    3.24     -8.01    -0.36 X
 82     5.78       23.00  32.41    3.32     -9.41    -0.43 X
 83     5.80       24.00  32.26    3.33     -8.26    -0.37 X
101     1.81        9.00  58.59    1.34    -49.59    -2.22R
121     3.84       94.00  45.19    1.90     48.81     2.19R
143     7.07       10.00  23.91    4.36    -13.91    -0.63 X
150     1.00       17.00  63.96    1.67    -46.96    -2.11R
153     5.68       20.00  33.04    3.24    -13.04    -0.59 X
177     6.63       47.00  26.78    4.00     20.22     0.92 X
189     1.00        6.00  63.96    1.67    -57.96    -2.60R
207     6.63       29.00  26.82    3.99      2.18     0.10 X
224     5.65       53.00  33.29    3.21     19.71     0.89 X
227     5.98       71.00  31.08    3.48     39.92     1.81 X
232     7.09       23.00  23.74    4.38     -0.74    -0.03 X
263     5.04       87.00  37.27    2.74     49.73     2.24R
270     1.00       17.00  63.96    1.67    -46.96    -2.11R
276     1.00       19.00  63.96    1.67    -44.96    -2.02R
288     1.05        6.00  63.62    1.64    -57.62    -2.58R
291     5.88       16.00  31.74    3.40    -15.74    -0.71 X
298     3.39        0.00  48.18    1.64    -48.18    -2.16R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A4. Scatterplot and regression analysis of VIBI score versus 2001 LDI for area from 100 to 350 meters of assessment boundary.



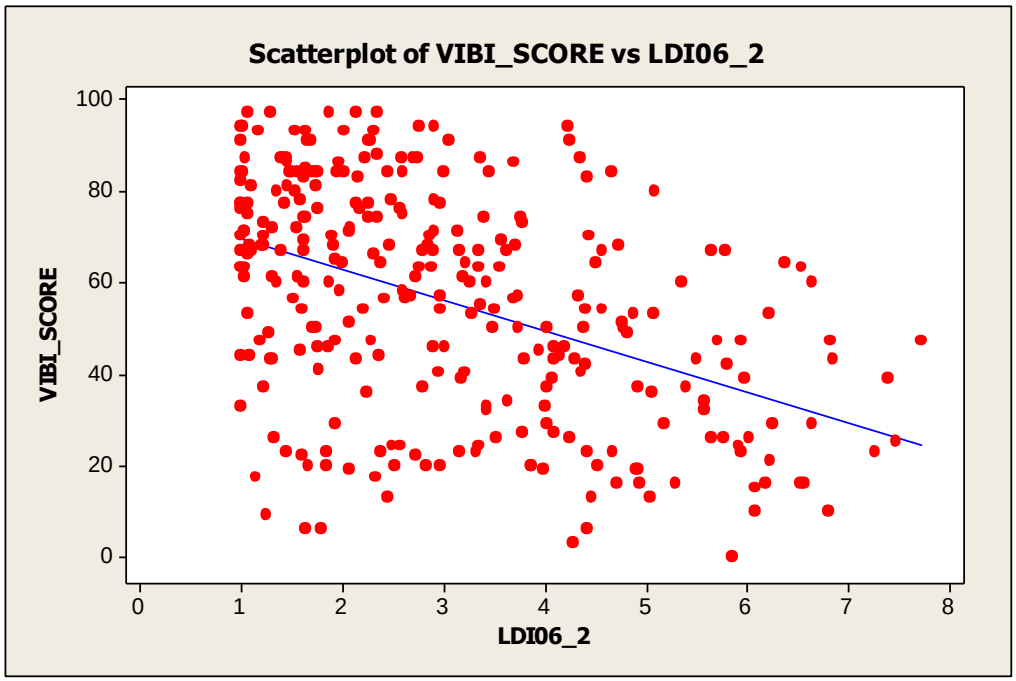

```
The regression equation is
VIBI_SCORE = 76.3 - 6.85 LDI01_2

Predictor      Coef  SE Coef      T      P
Constant     76.275    2.693  28.32  0.000
LDI01_2     -6.8492   0.7979  -8.58  0.000

S = 21.9203   R-Sq = 19.9%   R-Sq(adj) = 19.7%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   35407  35407  73.69  0.000
Residual Error   296  142228    481
Total            297  177635

Unusual Observations
Obs  LDI01_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  1     6.57       60.00  31.27    3.14     28.73     1.32 X
 68     7.48       25.00  25.05    3.81     -0.05    -0.00 X
101     1.31        9.00  67.32    1.84    -58.32    -2.67R
121     4.21       94.00  47.41    1.61     46.59     2.13R
143     6.79       10.00  29.78    3.30    -19.78    -0.91 X
163     1.68       20.00  64.80    1.64    -44.80    -2.05R
177     7.71       47.00  23.45    3.99     23.55     1.09 X
186     4.24       91.00  47.22    1.62     43.78     2.00R
189     1.62        6.00  65.17    1.67    -59.17    -2.71R
207     6.57       29.00  31.28    3.14     -2.28    -0.10 X
214     2.41       13.00  59.74    1.35    -46.74    -2.14R
232     7.27       23.00  26.50    3.65     -3.50    -0.16 X
235     6.80       47.00  29.72    3.30     17.28     0.80 X
267     6.55       16.00  31.43    3.12    -15.43    -0.71 X
270     1.14       17.00  68.45    1.94    -51.45    -2.36R
276     1.63       19.00  65.11    1.66    -46.11    -2.11R
288     1.86        6.00  63.53    1.55    -57.53    -2.63R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A5. Scatterplot and regression analysis of VIBI score versus 2006 LDI for area within 100 meters of assessment boundary.



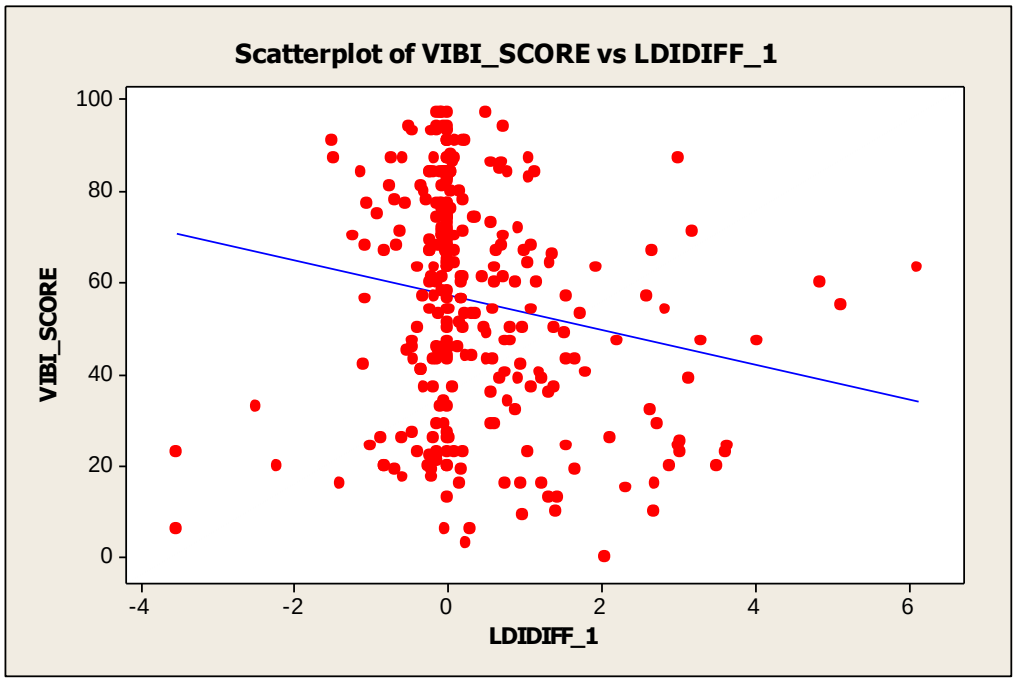

```
The regression equation is
VIBI_SCORE = 71.5 - 6.80 LDI06_1

Predictor      Coef  SE Coef      T      P
Constant     71.479    2.266  31.55  0.000
LDI06_1     -6.7990   0.8162  -8.33  0.000

S = 22.0486   R-Sq = 19.0%   R-Sq(adj) = 18.7%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   33737  33737  69.40  0.000
Residual Error   296  143898    486
Total            297  177635

Unusual Observations
Obs  LDI06_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  1     7.09       60.00  23.25    4.12     36.75     1.70 X
  7     1.00       20.00  64.68    1.66    -44.68    -2.03R
 11     7.13       63.00  22.98    4.15     40.02     1.85 X
 25     5.86       15.00  31.65    3.18    -16.65    -0.76 X
 60     6.12       55.00  29.84    3.38     25.16     1.15 X
101     1.99        9.00  57.97    1.30    -48.97    -2.22R
121     3.86       94.00  45.24    1.81     48.76     2.22R
143     7.06       10.00  23.47    4.10    -13.47    -0.62 X
150     1.00       17.00  64.68    1.66    -47.68    -2.17R
153     5.89       20.00  31.41    3.20    -11.41    -0.52 X
163     1.00       20.00  64.68    1.66    -44.68    -2.03R
177     6.70       47.00  25.95    3.81     21.05     0.97 X
187     6.05       16.00  30.38    3.32    -14.38    -0.66 X
189     1.00        6.00  64.68    1.66    -58.68    -2.67R
190     5.88       19.00  31.52    3.19    -12.52    -0.57 X
207     6.68       29.00  26.04    3.80      2.96     0.14 X
224     5.86       53.00  31.61    3.18     21.39     0.98 X
227     5.96       71.00  30.98    3.25     40.02     1.84 X
232     7.07       23.00  23.44    4.10     -0.44    -0.02 X
254     1.00       20.00  64.68    1.66    -44.68    -2.03R
263     4.96       87.00  37.77    2.52     49.23     2.25R
270     1.00       17.00  64.68    1.66    -47.68    -2.17R
276     1.00       19.00  64.68    1.66    -45.68    -2.08R
288     1.05        6.00  64.33    1.63    -58.33    -2.65R
298     3.72        0.00  46.20    1.73    -46.20    -2.10R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A6. Scatterplot and regression analysis of VIBI score versus 2006 LDI for area from 100 to 350 meters of assessment boundary.



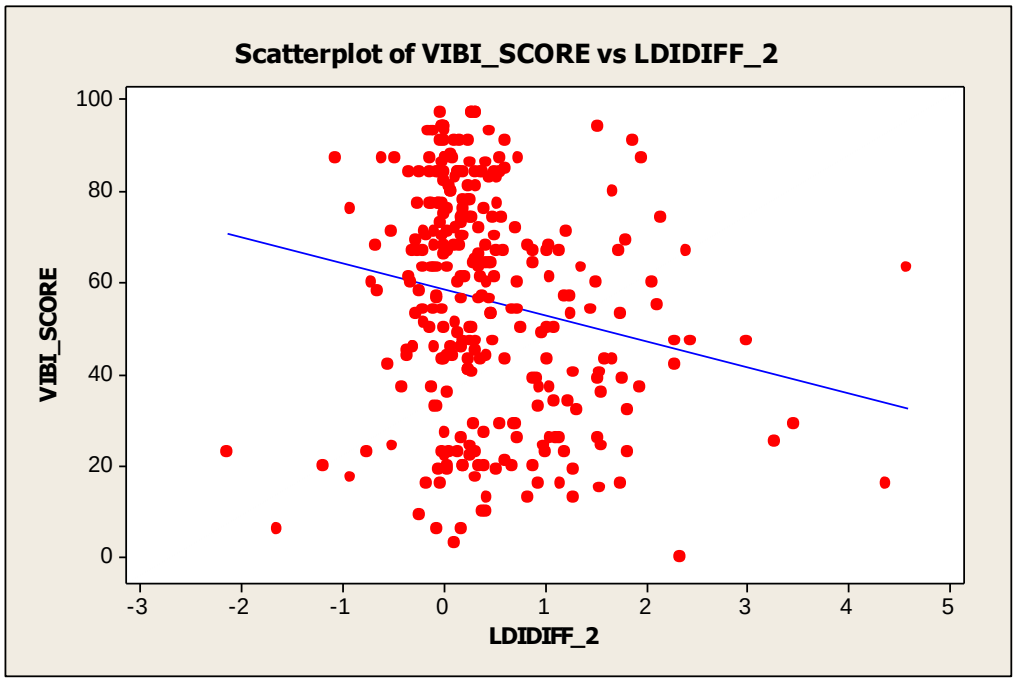

```
The regression equation is
VIBI_SCORE = 76.3 - 6.70 LDI06_2

Predictor      Coef  SE Coef      T      P
Constant     76.268    2.655  28.72  0.000
LDI06_2     -6.7000   0.7675  -8.73  0.000

S = 21.8459   R-Sq = 20.5%   R-Sq(adj) = 20.2%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   36371  36371  76.21  0.000
Residual Error   296  141264    477
Total            297  177635

Unusual Observations
Obs  LDI06_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  3     7.40       39.00  26.72    3.57     12.28     0.57 X
 68     7.48       25.00  26.12    3.64     -1.12    -0.05 X
101     1.26        9.00  67.79    1.86    -58.79    -2.70R
121     4.24       94.00  47.87    1.56     46.13     2.12R
130     4.29        3.00  47.52    1.59    -44.52    -2.04R
143     6.80       10.00  30.69    3.15    -20.69    -0.96 X
150     2.33       17.00  60.65    1.38    -43.65    -2.00R
163     1.69       20.00  64.98    1.64    -44.98    -2.06R
177     7.72       47.00  24.54    3.81     22.46     1.04 X
185     6.86       43.00  30.33    3.19     12.67     0.59 X
189     1.64        6.00  65.27    1.66    -59.27    -2.72R
214     2.45       13.00  59.84    1.34    -46.84    -2.15R
232     7.28       23.00  27.50    3.49     -4.50    -0.21 X
235     6.83       47.00  30.52    3.17     16.48     0.76 X
254     1.85       20.00  63.85    1.56    -43.85    -2.01R
270     1.16       17.00  68.50    1.92    -51.50    -2.37R
285     1.45       23.00  66.56    1.76    -43.56    -2.00R
288     1.79        6.00  64.24    1.59    -58.24    -2.67R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A7. Scatterplot and regression analysis of VIBI score versus difference between 2006 and 1992 LDI for area within 100 meters of assessment boundary.



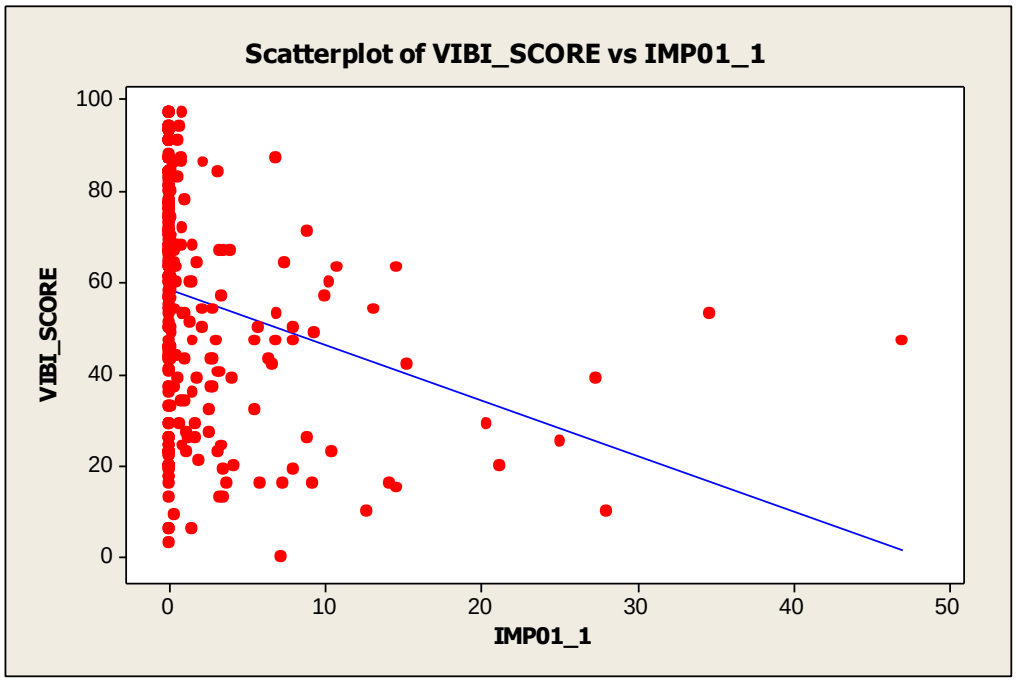

```
The regression equation is
VIBI_SCORE = 57.2 - 3.78 LDIDIFF_1

Predictor     Coef  SE Coef      T      P
Constant    57.249    1.465  39.09  0.000
LDIDIFF_1   -3.778    1.223  -3.09  0.002

S = 24.1120   R-Sq = 3.1%   R-Sq(adj) = 2.8%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    5544.8  5544.8  9.54  0.002
Residual Error   296  172090.5   581.4
Total            297  177635.3

Unusual Observations
Obs  LDIDIFF_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  1       4.84       60.00  38.97    5.65     21.03     0.90 X
  3       3.13       39.00  45.43    3.66     -6.43    -0.27 X
 11       6.13       63.00  34.08    7.20     28.92     1.26 X
 33       3.00       24.00  45.92    3.52    -21.92    -0.92 X
 60       5.12       55.00  37.89    5.99     17.11     0.73 X
 68       3.03       25.00  45.82    3.55    -20.82    -0.87 X
 82       3.62       23.00  43.57    4.23    -20.57    -0.87 X
 83       3.64       24.00  43.50    4.25    -19.50    -0.82 X
107      -2.49       33.00  66.66    3.76    -33.66    -1.41 X
130       0.25        3.00  56.29    1.40    -53.29    -2.21R
153       3.50       20.00  44.03    4.09    -24.03    -1.01 X
159       0.29        6.00  56.14    1.40    -50.14    -2.08R
177       4.02       47.00  42.07    4.69      4.93     0.21 X
189      -3.54        6.00  70.62    4.97    -64.62    -2.74RX
201       3.30       47.00  44.77    3.86      2.23     0.09 X
227       3.18       71.00  45.24    3.72     25.76     1.08 X
232       3.03       23.00  45.81    3.55    -22.81    -0.96 X
254      -2.22       20.00  65.64    3.45    -45.64    -1.91 X
263       3.00       87.00  45.92    3.52     41.08     1.72 X
284      -3.54       23.00  70.62    4.97    -47.62    -2.02RX
288      -0.02        6.00  57.31    1.47    -51.31    -2.13R
298       2.05        0.00  49.50    2.50    -49.50    -2.06R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A8. Scatterplot and regression analysis of VIBI score versus difference between 2006 and 1992 LDI for area from 100 to 350 meters of assessment boundary.



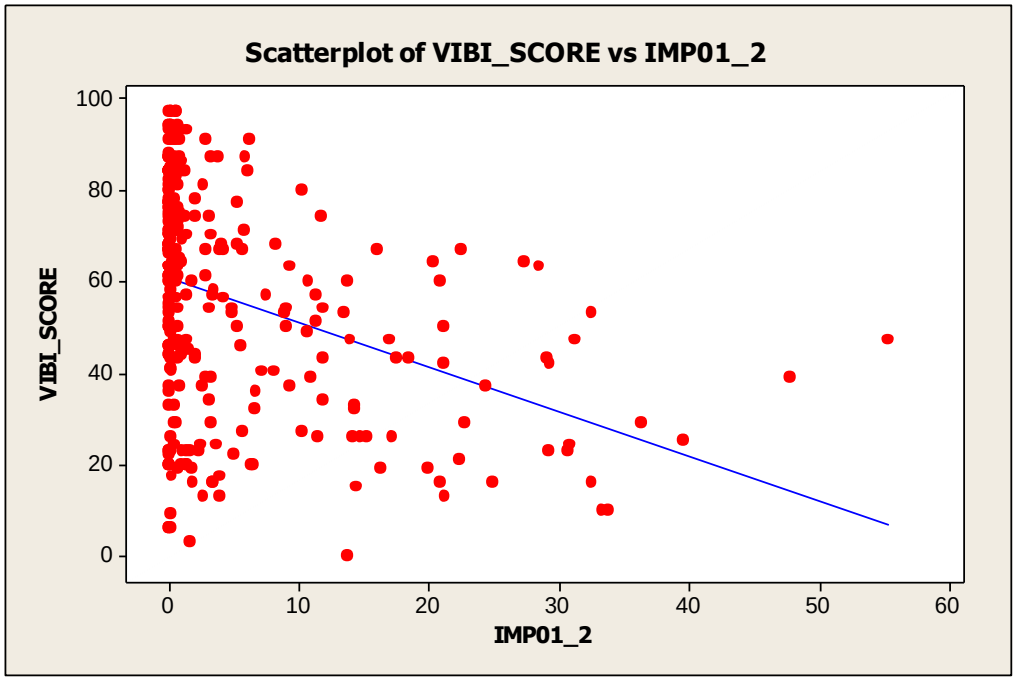

```
The regression equation is
VIBI_SCORE = 58.5 - 5.66 LDIDIFF_2

Predictor     Coef  SE Coef      T      P
Constant    58.465    1.601  36.51  0.000
LDIDIFF_2   -5.665    1.732  -3.27  0.001

S = 24.0664   R-Sq = 3.5%   R-Sq(adj) = 3.2%

Analysis of Variance
Source            DF        SS      MS      F      P
Regression         1    6195.3  6195.3  10.70  0.001
Residual Error   296  171440.1   579.2
Total            297  177635.3

Unusual Observations
Obs  LDIDIFF_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 11       4.58       63.00  32.52    7.28     30.48     1.33 X
 68       3.27       25.00  39.95    5.07    -14.95    -0.64 X
101      -0.24        9.00  59.83    1.84    -50.83    -2.12R
130       0.11        3.00  57.85    1.52    -54.85    -2.28R
133       4.38       16.00  33.66    6.94    -17.66    -0.77 X
159       0.18        6.00  57.46    1.47    -51.46    -2.14R
177       3.00       47.00  41.46    4.63      5.54     0.23 X
189      -1.63        6.00  67.70    3.87    -61.70    -2.60RX
200       2.40       67.00  44.87    3.65     22.13     0.93 X
201       2.43       47.00  44.68    3.70      2.32     0.10 X
207       3.46       29.00  38.89    5.38     -9.89    -0.42 X
216       2.29       42.00  45.51    3.47     -3.51    -0.15 X
284      -2.14       23.00  70.59    4.71    -47.59    -2.02RX
288      -0.06        6.00  58.78    1.65    -52.78    -2.20R
297       2.28       47.00  45.52    3.46      1.48     0.06 X
298       2.34        0.00  45.19    3.56    -45.19    -1.90 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A9. Scatterplot and regression analysis of VIBI score versus 2001 percent impervious surface for area within 100 meters of assessment boundary.



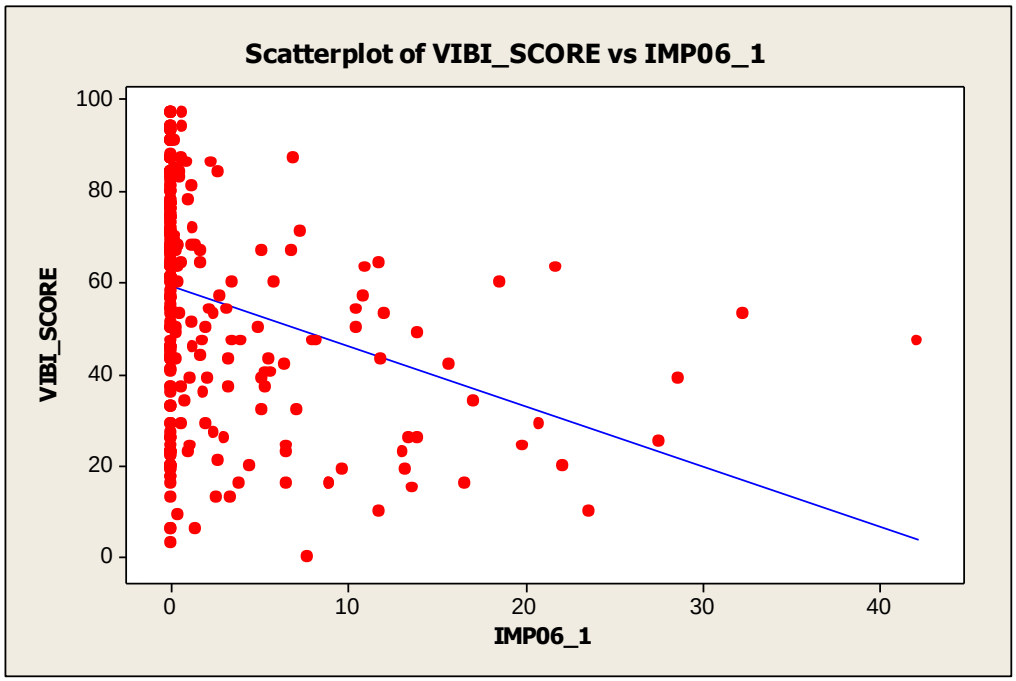

```
The regression equation is
VIBI_SCORE = 58.3 - 1.21 IMP01_1

Predictor      Coef  SE Coef      T      P
Constant     58.300    1.465  39.80  0.000
IMP01_1     -1.2126   0.2607  -4.65  0.000

S = 23.6484   R-Sq = 6.8%   R-Sq(adj) = 6.5%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   12099  12099  21.63  0.000
Residual Error   296  165537    559
Total            297  177635

Unusual Observations
Obs  IMP01_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  3     27.4       39.00  25.07    6.77     13.93      0.61 X
 11     14.6       63.00  40.65    3.55     22.35      0.96 X
 25     14.5       15.00  40.67    3.55    -25.67     -1.10 X
 31     28.1       10.00  24.28    6.93    -14.28     -0.63 X
 68     25.2       25.00  27.80    6.19     -2.80     -0.12 X
101      0.3        9.00  57.96    1.44    -48.96     -2.07R
130      0.0        3.00  58.30    1.46    -55.30     -2.34R
153     21.3       20.00  32.53    5.21    -12.53     -0.54 X
159      1.5        6.00  56.49    1.38    -50.49     -2.14R
177     47.0       47.00   1.36   11.80     45.64      2.23RX
187     14.1       16.00  41.22    3.44    -25.22     -1.08 X
189      0.0        6.00  58.30    1.46    -52.30     -2.22R
207     20.5       29.00  33.48    5.01     -4.48     -0.19 X
216     15.2       42.00  39.84    3.71      2.16      0.09 X
224     34.7       53.00  16.26    8.63     36.74      1.67 X
288      0.0        6.00  58.30    1.46    -52.30     -2.22R
298      7.2        0.00  49.56    1.93    -49.56     -2.10R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A10. Scatterplot and regression analysis of VIBI score versus 2001 percent impervious surface for area from 100 to 350 meters of assessment boundary.



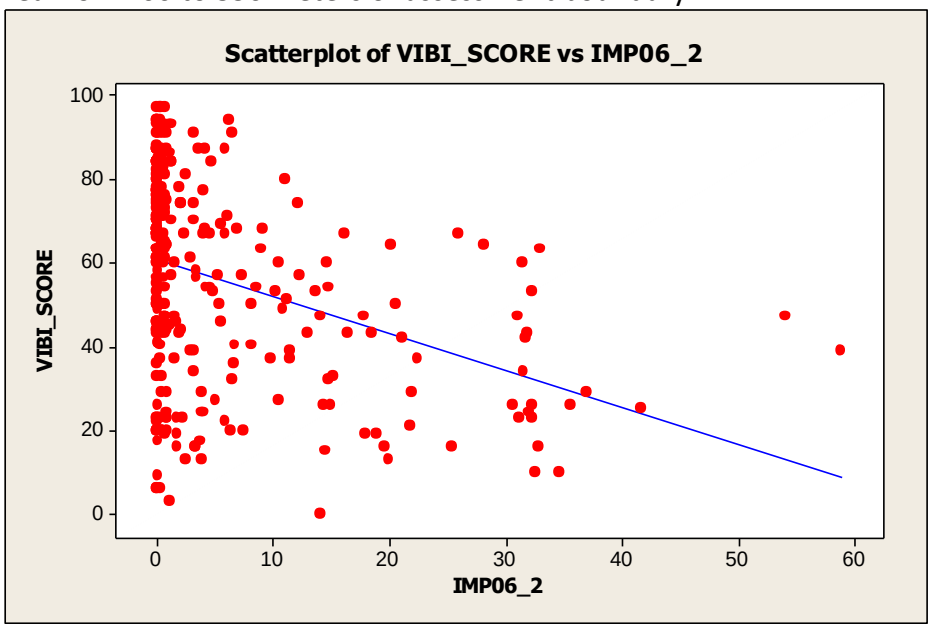

```
The regression equation is
VIBI_SCORE = 60.9 - 0.976 IMP01_2

Predictor      Coef  SE Coef      T      P
Constant     60.921    1.523  40.00  0.000
IMP01_2     -0.9755   0.1463  -6.67  0.000

S = 22.8414   R-Sq = 13.1%   R-Sq(adj) = 12.8%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   23203  23203  44.47  0.000
Residual Error   296  154432    522
Total            297  177635

Unusual Observations
Obs  IMP01_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  3     47.8       39.00  14.29    6.38     24.71      1.13 X
 11     28.6       63.00  33.01    3.68     29.99      1.33 X
 31     33.4       10.00  28.33    4.34    -18.33     -0.82 X
 67     29.3       42.00  32.31    3.77      9.69      0.43 X
 68     39.6       25.00  22.33    5.20      2.67      0.12 X
 82     30.8       23.00  30.92    3.97     -7.92     -0.35 X
 83     30.8       24.00  30.89    3.97     -6.89     -0.31 X
101      0.2        9.00  60.75    1.51    -51.75     -2.27R
130      1.7        3.00  59.29    1.42    -56.29     -2.47R
133     32.6       16.00  29.09    4.23    -13.09     -0.58 X
143     33.8       10.00  27.99    4.39    -17.99     -0.80 X
159      0.4        6.00  60.56    1.50    -54.56     -2.39R
177     55.3       47.00   6.94    7.46     40.06      1.86 X
185     29.2       43.00  32.47    3.75     10.53      0.47 X
189      0.0        6.00  60.92    1.52    -54.92     -2.41R
207     36.4       29.00  25.45    4.75      3.55      0.16 X
224     32.5       53.00  29.18    4.22     23.82      1.06 X
232     29.2       23.00  32.44    3.76     -9.44     -0.42 X
235     31.2       47.00  30.48    4.03     16.52      0.73 X
283     27.3       64.00  34.30    3.50     29.70      1.32 X
288      0.0        6.00  60.91    1.52    -54.91     -2.41R
298     13.7        0.00  47.53    1.82    -47.53     -2.09R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A11. Scatterplot and regression analysis of VIBI score versus 2006 percent impervious surface for area within 100 meters of assessment boundary.



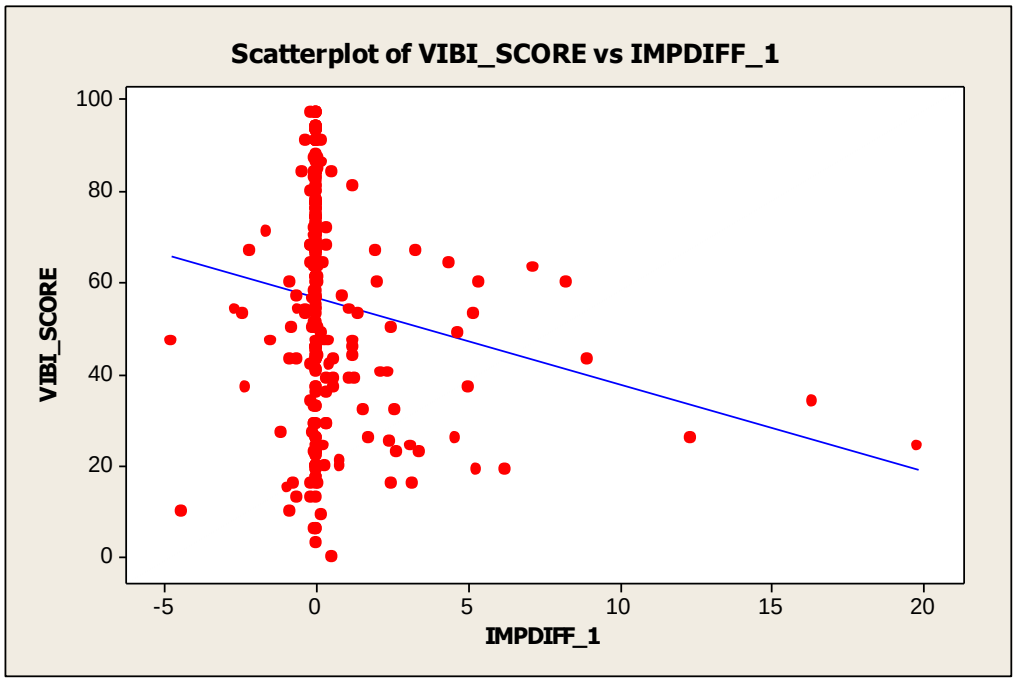

```
The regression equation is
VIBI_SCORE = 59.1 - 1.31 IMP06_1

Predictor      Coef  SE Coef      T      P
Constant     59.112    1.473  40.13  0.000
IMP06_1     -1.3147   0.2388  -5.50  0.000

S = 23.3322   R-Sq = 9.3%   R-Sq(adj) = 9.0%

Analysis of Variance
Source            DF      SS      MS      F      P
Regression         1   16495   16495  30.30  0.000
Residual Error   296  161141     544
Total            297  177635

Unusual Observations
Obs  IMP06_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  1     18.6       60.00  34.65    4.09     25.35      1.10 X
  3     28.7       39.00  21.43    6.40     17.57      0.78 X
 11     21.7       63.00  30.57    4.79     32.43      1.42 X
 31     23.6       10.00  28.07    5.23    -18.07     -0.79 X
 33     19.8       24.00  33.03    4.37     -9.03     -0.39 X
 68     27.6       25.00  22.85    6.15      2.15      0.10 X
101      0.5        9.00  58.51    1.43    -49.51     -2.13R
130      0.0        3.00  59.11    1.47    -56.11     -2.41R
153     22.1       20.00  30.08    4.88    -10.08     -0.44 X
159      1.5        6.00  57.20    1.37    -51.20     -2.20R
177     42.2       47.00   3.67    9.58     43.33      2.04RX
187     16.6       16.00  37.29    3.64    -21.29     -0.92 X
189      0.0        6.00  59.11    1.47    -53.11     -2.28R
207     20.8       29.00  31.77    4.59     -2.77     -0.12 X
216     15.7       42.00  38.48    3.44      3.52      0.15 X
222     17.1       34.00  36.59    3.76     -2.59     -0.11 X
224     32.3       53.00  16.71    7.24     36.29      1.64 X
288      0.0        6.00  59.11    1.47    -53.11     -2.28R
298      7.7        0.00  48.96    1.85    -48.96     -2.11R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A12. Scatterplot and regression analysis of VIBI score versus 2006 percent impervious surface for area from 100 to 350 meters of assessment boundary.



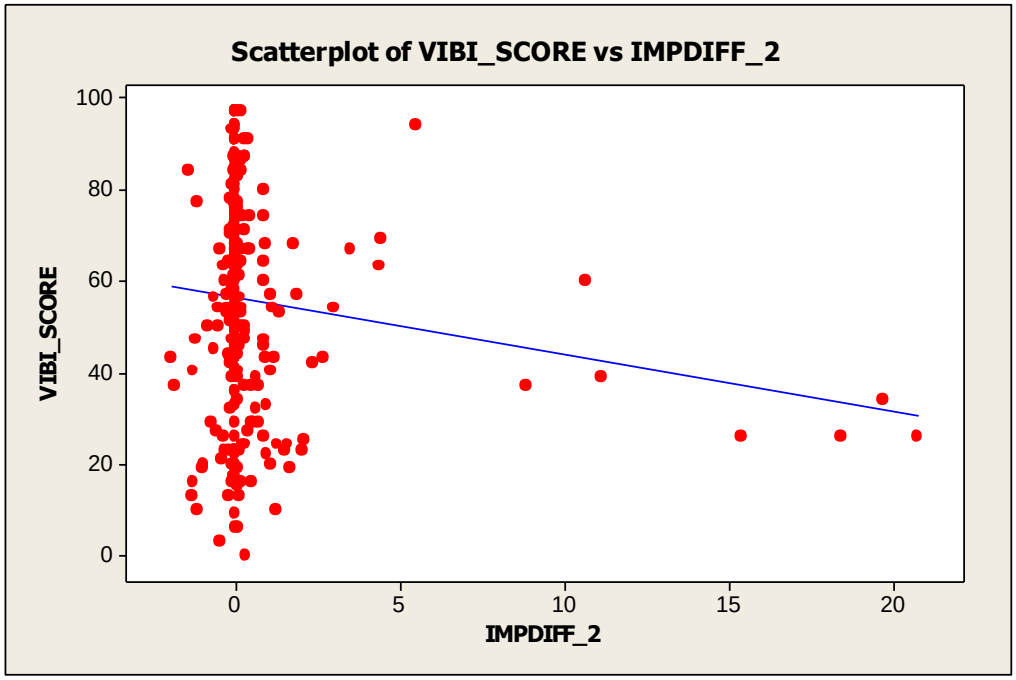

```
The regression equation is
VIBI_SCORE = 60.9 - 0.885 IMP06_2

Predictor      Coef  SE Coef      T      P
Constant     60.886    1.522  39.99  0.000
IMP06_2     -0.8855   0.1332  -6.65  0.000

S = 22.8520   R-Sq = 13.0%   R-Sq(adj) = 12.7%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   23060  23060  44.16  0.000
Residual Error   296  154575    522
Total            297  177635

Unusual Observations
Obs  IMP06_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  3     58.9       39.00   8.73    7.22     30.27     1.40 X
 11     32.9       63.00  31.71    3.87     31.29     1.39 X
 31     34.6       10.00  30.24    4.08    -20.24    -0.90 X
 67     31.7       42.00  32.85    3.71      9.15     0.41 X
 68     41.6       25.00  24.03    4.97      0.97     0.04 X
 82     32.2       23.00  32.33    3.78     -9.33    -0.41 X
 83     32.1       24.00  32.50    3.76     -8.50    -0.38 X
 97     31.5       60.00  33.00    3.69     27.00     1.20 X
101      0.2        9.00  60.75    1.51    -51.75    -2.27R
130      1.2        3.00  59.85    1.45    -56.85    -2.49R
133     32.8       16.00  31.88    3.85    -15.88    -0.70 X
143     32.6       10.00  32.05    3.82    -22.05    -0.98 X
148     32.2       26.00  32.33    3.78     -6.33    -0.28 X
159      0.4        6.00  60.55    1.50    -54.55    -2.39R
177     54.1       47.00  13.01    6.59     33.99     1.55 X
185     31.8       43.00  32.73    3.73     10.27     0.46 X
189      0.0        6.00  60.89    1.52    -54.89    -2.41R
207     36.9       29.00  28.22    4.37      0.78     0.03 X
214      2.5       13.00  58.66    1.39    -45.66    -2.00R
221     30.6       26.00  33.75    3.58     -7.75    -0.34 X
222     31.6       34.00  32.92    3.70      1.08     0.05 X
223     35.6       26.00  29.38    4.20     -3.38    -0.15 X
224     32.2       53.00  32.35    3.78     20.65     0.92 X
232     31.2       23.00  33.26    3.65    -10.26    -0.45 X
235     31.1       47.00  33.38    3.64     13.62     0.60 X
283     28.1       64.00  35.99    3.27     28.01     1.24 X
288      0.1        6.00  60.83    1.52    -54.83    -2.40R
298     14.0        0.00  48.47    1.73    -48.47    -2.13R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A13. Scatterplot and regression analysis of VIBI score versus difference between 2006 and 2001 percent impervious surface for area within 100 meters of assessment boundary.



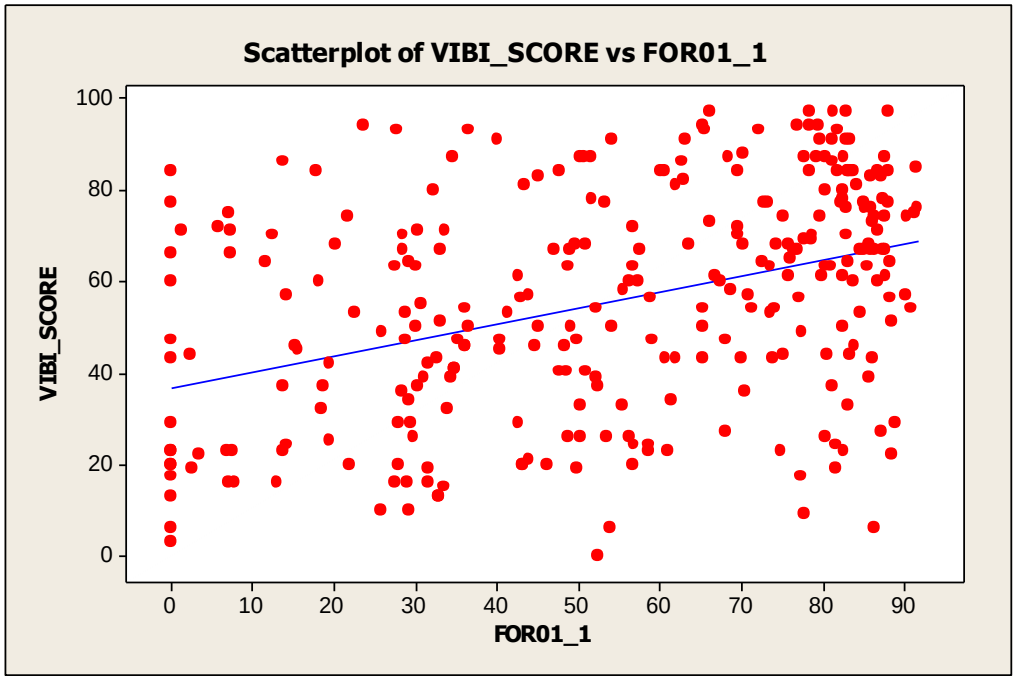

```
The regression equation is
VIBI_SCORE = 56.8 - 1.90 IMPDIFF_1

Predictor      Coef  SE Coef      T      P
Constant     56.770    1.432  39.64  0.000
IMPDIFF_1   -1.9003   0.6571  -2.89  0.004

S = 24.1584   R-Sq = 2.7%   R-Sq(adj) = 2.4%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    4880.9  4880.9  8.36  0.004
Residual Error   296  172754.5   583.6
Total            297  177635.3

Unusual Observations
Obs  IMPDIFF_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  1        8.3       60.00  41.08    5.31     18.92     0.80 X
 11        7.2       63.00  43.17    4.61     19.83     0.84 X
 31       -4.4       10.00  65.22    3.52    -55.22    -2.31RX
 33       19.8       24.00  19.07   12.81      4.93     0.24 X
 57        8.9       43.00  39.79    5.74      3.21     0.14 X
 97        5.4       60.00  46.54    3.52     13.46     0.56 X
130        0.0        3.00  56.77    1.43    -53.77    -2.23R
143       -0.9       10.00  58.43    1.65    -48.43    -2.01R
148       12.3       26.00  33.34    7.92     -7.34    -0.32 X
159       -0.0        6.00  56.84    1.44    -50.84    -2.11R
177       -4.8       47.00  65.86    3.72    -18.86    -0.79 X
189        0.0        6.00  56.77    1.43    -50.77    -2.11R
190        6.2       19.00  44.98    4.02    -25.98    -1.09 X
222       16.3       34.00  25.70   10.53      8.30     0.38 X
236        5.3       19.00  46.72    3.47    -27.72    -1.16 X
288        0.0        6.00  56.77    1.43    -50.77    -2.11R
298        0.5        0.00  55.79    1.40    -55.79    -2.31R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A14. Scatterplot and regression analysis of VIBI score versus difference between 2006 and 2001 percent impervious surface for area from 100 to 350 meters of assessment boundary.



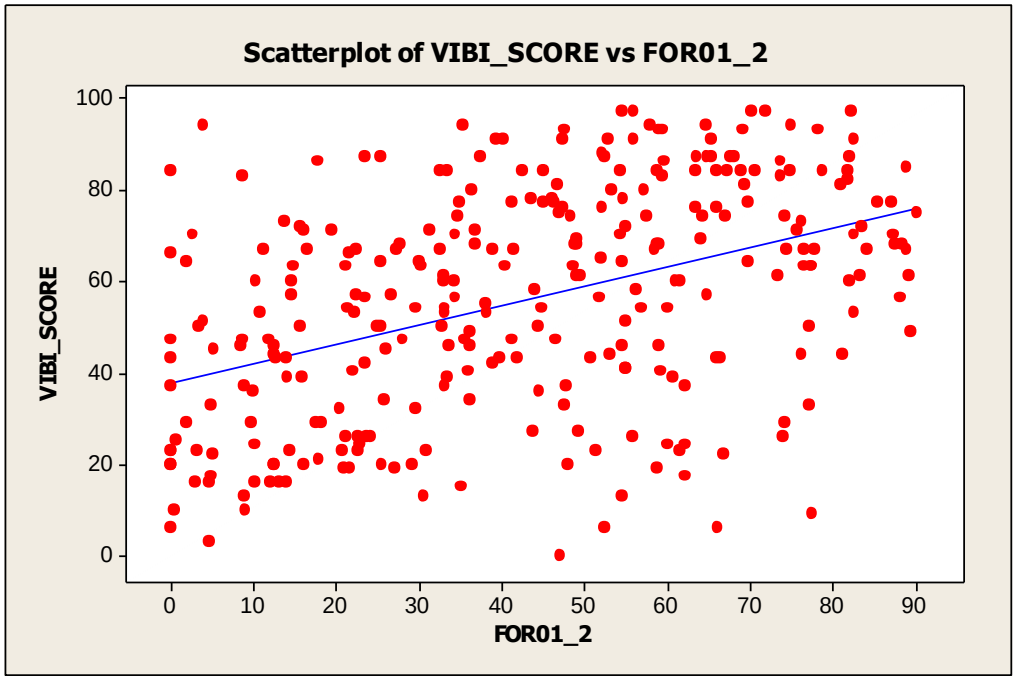

```
The regression equation is
VIBI_SCORE = 56.5 - 1.25 IMPDIFF_2

Predictor      Coef  SE Coef      T      P
Constant     56.494    1.435  39.37  0.000
IMPDIFF_2   -1.2467   0.5711  -2.18  0.030

S = 24.3025   R-Sq = 1.6%   R-Sq(adj) = 1.3%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    2814.6  2814.6  4.77  0.030
Residual Error   296  174820.8   590.6
Total            297  177635.3

Unusual Observations
Obs  IMPDIFF_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  3       11.1       39.00  42.66    6.22     -3.66    -0.16 X
 97       10.6       60.00  43.27    5.95     16.73     0.71 X
130       -0.5        3.00  57.12    1.52    -54.12    -2.23R
148       20.8       26.00  30.62   11.66     -4.62    -0.22 X
154        8.8       37.00  45.47    4.97     -8.47    -0.36 X
159        0.0        6.00  56.48    1.43    -50.48    -2.08R
189        0.0        6.00  56.49    1.43    -50.49    -2.08R
221       15.4       26.00  37.33    8.62    -11.33    -0.50 X
222       19.7       34.00  31.95   11.06      2.05     0.09 X
223       18.4       26.00  33.59   10.31     -7.59    -0.34 X
288        0.1        6.00  56.42    1.43    -50.42    -2.08R
298        0.3        0.00  56.12    1.41    -56.12    -2.31R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A15. Scatterplot and regression analysis of VIBI score versus 2001 percent forest canopy for area within 100 meters of assessment boundary.



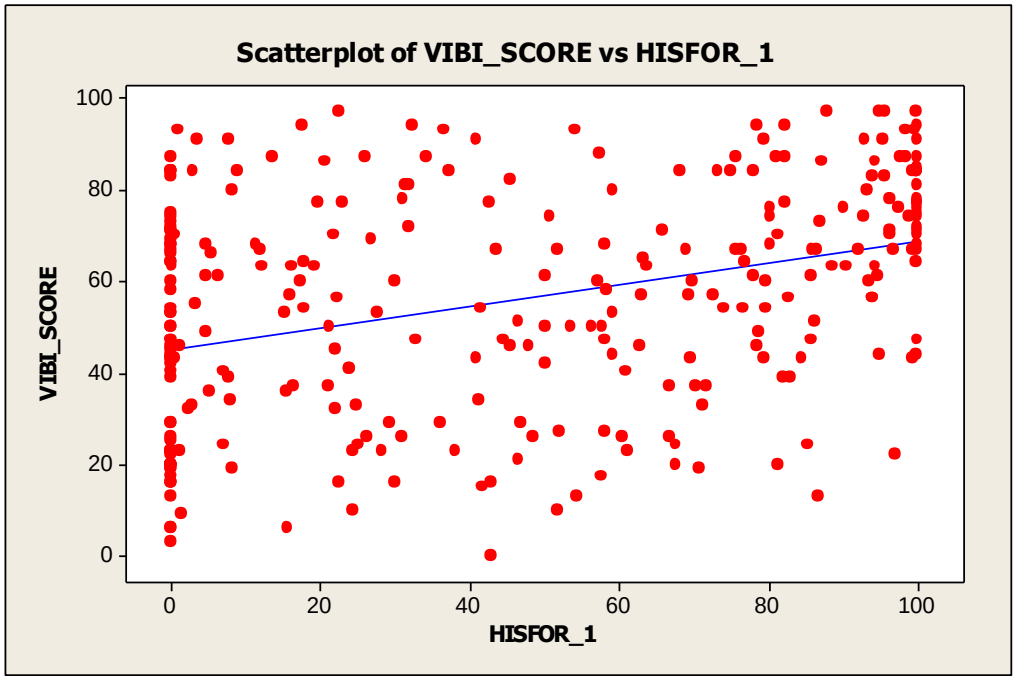

```
The regression equation is
VIBI_SCORE = 36.8 + 0.350 FOR01_1

Predictor      Coef  SE Coef      T      P
Constant     36.802    2.895  12.71  0.000
FOR01_1     0.35039  0.04745   7.38  0.000

S = 22.5113   R-Sq = 15.6%   R-Sq(adj) = 15.3%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   27635  27635  54.53  0.000
Residual Error   296  150000    507
Total            297  177635

Unusual Observations
Obs  FOR01_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 56      0.0       84.00  36.80    2.89     47.20     2.11R
 94     27.7       93.00  46.51    1.82     46.49     2.07R
101     77.7        9.00  64.04    1.71    -55.04    -2.45R
121     23.7       94.00  45.10    1.96     48.90     2.18R
150     77.4       17.00  63.91    1.70    -46.91    -2.09R
189     53.8        6.00  55.67    1.30    -49.67    -2.21R
203     88.4       22.00  67.77    2.07    -45.77    -2.04R
276     81.5       19.00  65.37    1.83    -46.37    -2.07R
288     86.3        6.00  67.06    2.00    -61.06    -2.72R
298     52.5        0.00  55.20    1.31    -55.20    -2.46R

R denotes an observation with a large standardized residual.
```

Figure A16. Scatterplot and regression analysis of VIBI score versus 2001 percent forest canopy for area from 100 to 350 meters of assessment boundary.



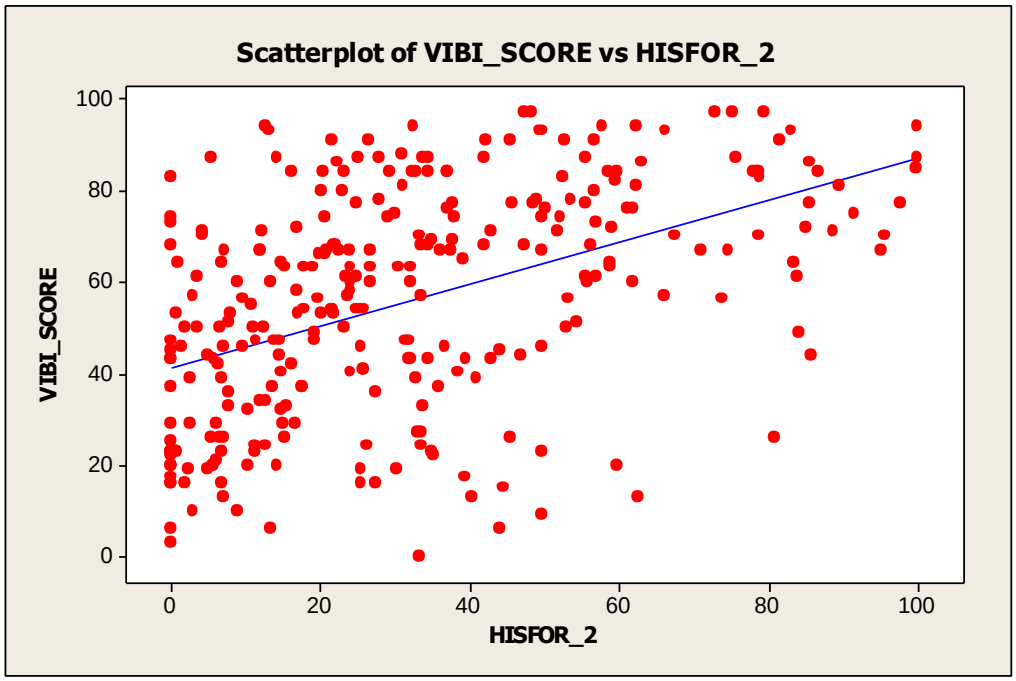

```
The regression equation is
VIBI_SCORE = 37.6 + 0.426 FOR01_2

Predictor      Coef  SE Coef      T      P
Constant     37.612    2.524  14.90  0.000
FOR01_2     0.42616  0.05078   8.39  0.000

S = 22.0176   R-Sq = 19.2%   R-Sq(adj) = 18.9%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   34142  34142  70.43  0.000
Residual Error   296  143494    485
Total            297  177635

Unusual Observations
Obs  FOR01_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 56      0.1       84.00  37.64    2.52     46.36     2.12R
101     77.6        9.00  70.68    2.18    -61.68    -2.82R
121      4.0       94.00  39.33    2.35     54.67     2.50R
150     62.3       17.00  64.14    1.61    -47.14    -2.15R
189     52.6        6.00  60.01    1.37    -54.01    -2.46R
203     66.9       22.00  66.11    1.76    -44.11    -2.01R
214     54.7       13.00  60.91    1.41    -47.91    -2.18R
288     66.1        6.00  65.80    1.74    -59.80    -2.72R
298     47.3        0.00  57.76    1.29    -57.76    -2.63R

R denotes an observation with a large standardized residual.
```

Figure A17. Scatterplot and regression analysis of VIBI score versus percent historic forest for area within 100 meters of assessment boundary.



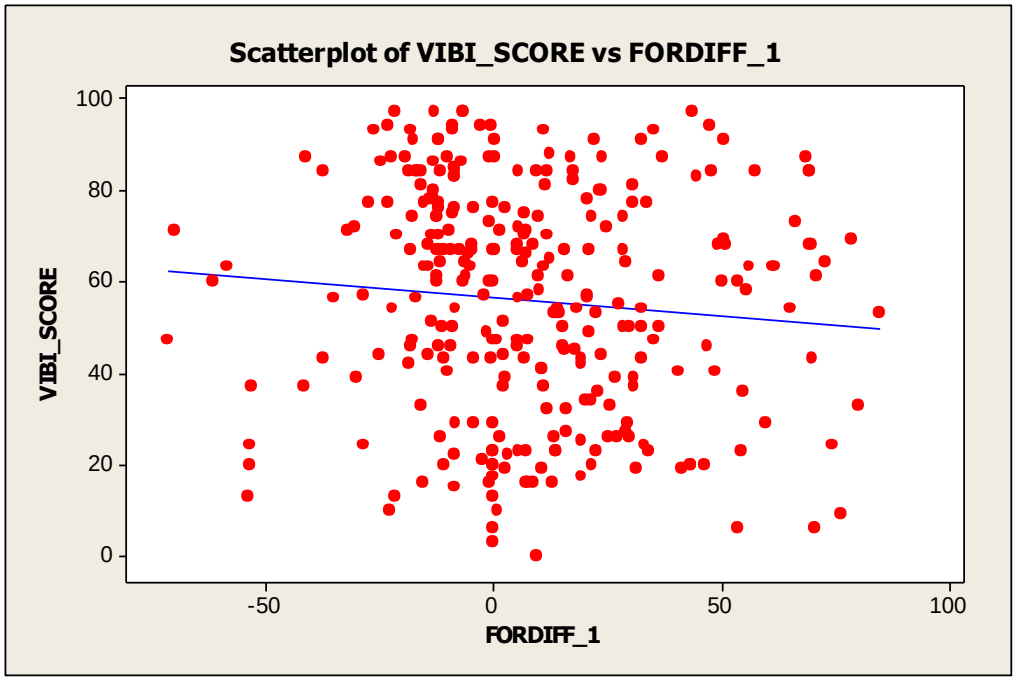

```
The regression equation is
VIBI_SCORE = 45.1 + 0.235 HISFOR_1

Predictor      Coef  SE Coef      T      P
Constant     45.092    2.097  21.51  0.000
HISFOR_1    0.23516  0.03541   6.64  0.000

S = 22.8540   R-Sq = 13.0%   R-Sq(adj) = 12.7%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   23033  23033  44.10  0.000
Residual Error   296  154602    522
Total            297  177635

Unusual Observations
Obs  HISFOR_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 31        52       10.00  57.24    1.34    -47.24    -2.07R
160        22       97.00  50.36    1.56     46.64     2.05R
180         1       93.00  45.35    2.07     47.65     2.09R
203        97       22.00  67.88    2.24    -45.88    -2.02R
214        87       13.00  65.46    1.96    -52.46    -2.30R
298        43        0.00  55.19    1.33    -55.19    -2.42R

R denotes an observation with a large standardized residual.
```

Figure A18. Scatterplot and regression analysis of VIBI score versus percent historic forest for area from 100 to 350 meters of assessment boundary.



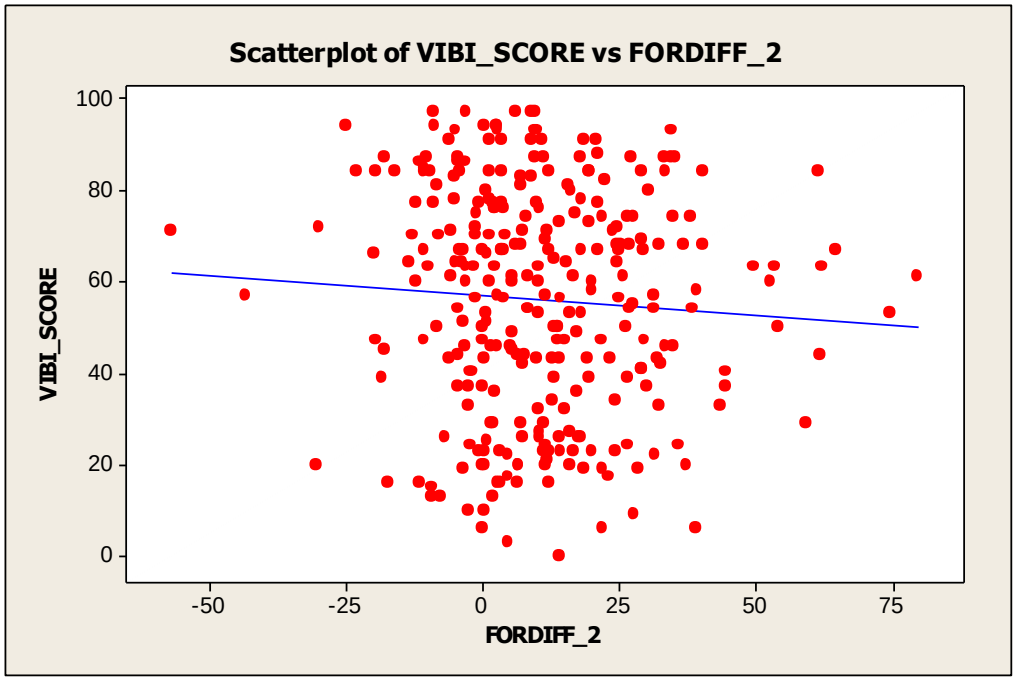

```
The regression equation is
VIBI_SCORE = 41.1 + 0.461 HISFOR_2

Predictor      Coef  SE Coef      T      P
Constant     41.117    2.004  20.52  0.000
HISFOR_2    0.46097  0.04898   9.41  0.000

S = 21.4922   R-Sq = 23.0%   R-Sq(adj) = 22.8%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   40909  40909  88.56  0.000
Residual Error   296  136727    462
Total            297  177635

Unusual Observations
Obs  HISFOR_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 25        44       15.00  61.63    1.39    -46.63    -2.17R
 32       100       85.00  87.07    3.54     -2.07    -0.10 X
 40        81       26.00  78.30    2.69    -52.30    -2.45R
 64        89       81.00  82.32    3.07     -1.32    -0.06 X
101        50        9.00  64.04    1.52    -55.04    -2.57R
121        13       94.00  46.94    1.57     47.06     2.20R
131        98       77.00  86.09    3.44     -9.09    -0.43 X
132        95       67.00  84.88    3.32    -17.88    -0.84 X
134       100       87.00  87.21    3.55     -0.21    -0.01 X
135       100       94.00  87.20    3.55      6.80     0.32 X
157        92       75.00  83.32    3.17     -8.32    -0.39 X
171        95       70.00  85.11    3.34    -15.11    -0.71 X
180        13       93.00  47.15    1.55     45.85     2.14R
214        63       13.00  69.95    1.95    -56.95    -2.66R
251        40       13.00  59.66    1.31    -46.66    -2.18R
254        60       20.00  68.59    1.84    -48.59    -2.27R
263         6       87.00  43.67    1.80     43.33     2.02R
288        44        6.00  61.41    1.38    -55.41    -2.58R
298        33        0.00  56.48    1.25    -56.48    -2.63R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A19. Scatterplot and regression analysis of VIBI score versus difference between 2001 percent forest canopy and percent historic forest for area within 100 meters of assessment boundary.



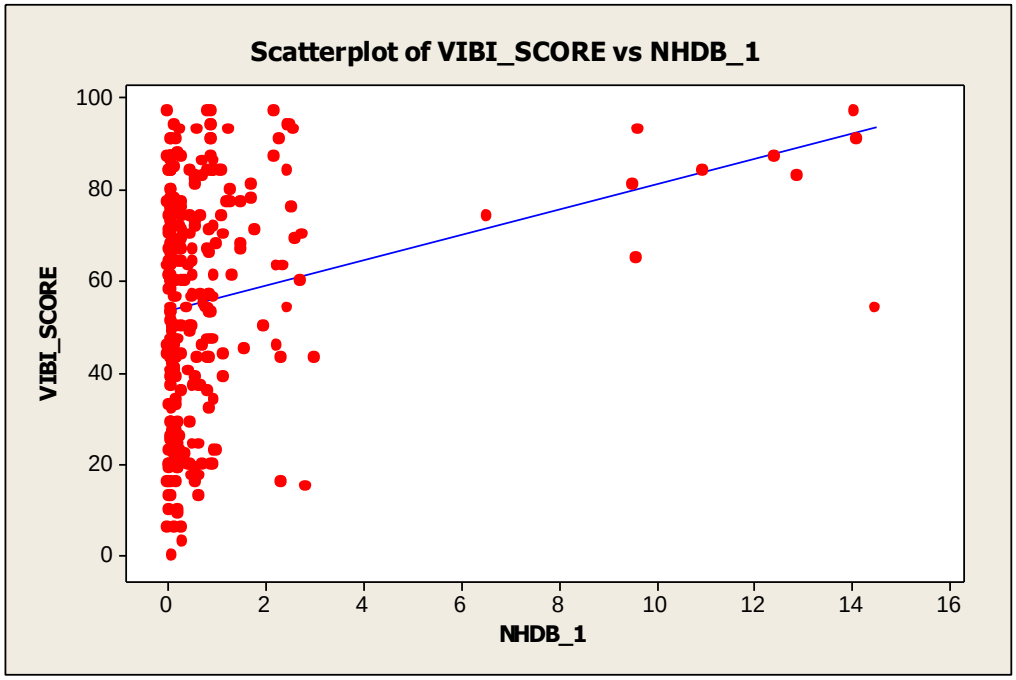

```
The regression equation is
VIBI_SCORE = 56.6 - 0.0809 FORDIFF_1

Predictor       Coef  SE Coef      T      P
Constant      56.581    1.477  38.31  0.000
FORDIFF_1   -0.08087  0.05022  -1.61  0.108

S = 24.3907   R-Sq = 0.9%   R-Sq(adj) = 0.5%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    1542.9  1542.9  2.59  0.108
Residual Error   296  176092.4   594.9
Total            297  177635.3

Unusual Observations
Obs  FORDIFF_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  1      -61.4       60.00  61.55    3.79     -1.55     -0.06 X
 11      -58.4       63.00  61.30    3.65      1.70      0.07 X
 47       74.5       24.00  50.56    3.60    -26.56     -1.10 X
101       76.2        9.00  50.42    3.68    -41.42     -1.72 X
108       72.7       64.00  50.71    3.52     13.29      0.55 X
130        0.0        3.00  56.58    1.48    -53.58     -2.20R
146       78.5       69.00  50.23    3.79     18.77      0.78 X
159        0.0        6.00  56.58    1.48    -50.58     -2.08R
177      -71.1       47.00  62.33    4.24    -15.33     -0.64 X
286      -69.8       71.00  62.22    4.18      8.78      0.37 X
290       84.6       53.00  49.74    4.07      3.26      0.14 X
292       80.2       33.00  50.09    3.87    -17.09     -0.71 X
298        9.6        0.00  55.81    1.41    -55.81     -2.29R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A20. Scatterplot and regression analysis of VIBI score versus difference between 2001 percent forest canopy and percent historic forest for area from 100 to 350 meters of assessment boundary.



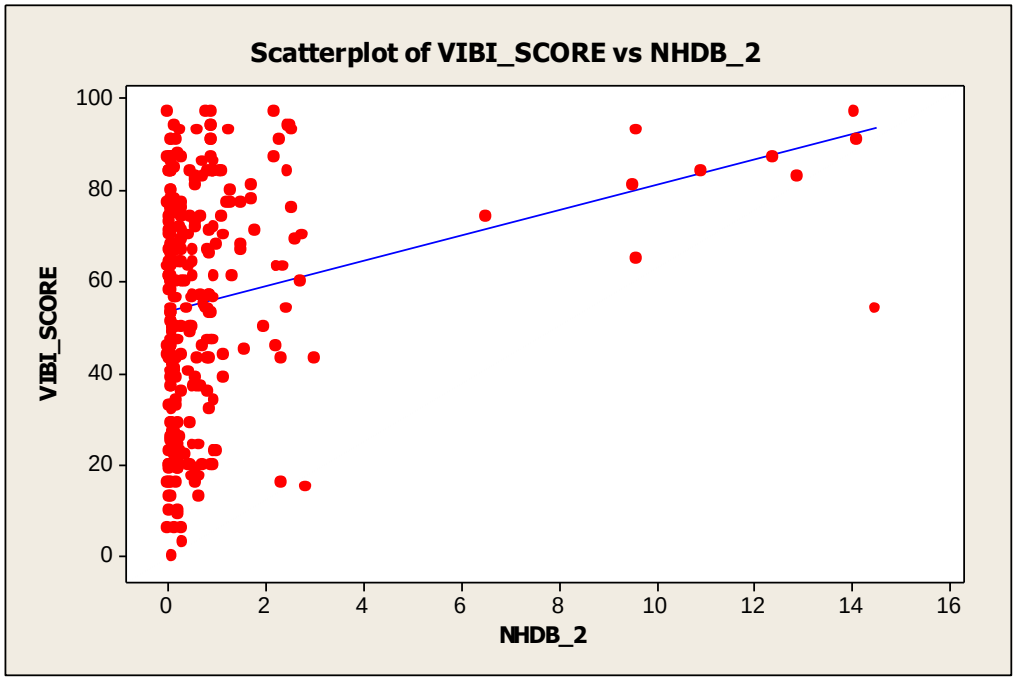

```
The regression equation is
VIBI_SCORE = 56.8 - 0.0868 FORDIFF_2

Predictor       Coef  SE Coef      T      P
Constant      56.830    1.647  34.51  0.000
FORDIFF_2   -0.08681  0.07753  -1.12  0.264

S = 24.4456   R-Sq = 0.4%   R-Sq(adj) = 0.1%

Analysis of Variance
Source            DF        SS     MS     F      P
Regression         1     749.1  749.1  1.25  0.264
Residual Error   296  176886.2  597.6
Total            297  177635.3

Unusual Observations
Obs  FORDIFF_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  2       61.4       84.00  51.50    4.17     32.50     1.35 X
 19       59.0       29.00  51.70    4.00    -22.70    -0.94 X
123      -43.3       57.00  60.59    4.43     -3.59    -0.15 X
130        4.8        3.00  56.42    1.49    -53.42    -2.19R
159        0.0        6.00  56.83    1.65    -50.83    -2.08R
167       53.9       50.00  52.15    3.63     -2.15    -0.09 X
181       53.4       63.00  52.19    3.59     10.81     0.45 X
191       79.8       61.00  49.90    5.53     11.10     0.47 X
244       52.6       60.00  52.26    3.54      7.74     0.32 X
245       61.8       44.00  51.46    4.20     -7.46    -0.31 X
246       64.7       67.00  51.21    4.41     15.79     0.66 X
247       62.0       63.00  51.45    4.21     11.55     0.48 X
254      -30.5       20.00  59.47    3.50    -39.47    -1.63 X
286      -57.2       71.00  61.79    5.46      9.21     0.39 X
288       22.1        6.00  54.91    1.66    -48.91    -2.01R
290       74.6       53.00  50.36    5.14      2.64     0.11 X
298       14.0        0.00  55.62    1.44    -55.62    -2.28R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A21. Scatterplot and regression analysis of VIBI score versus ODNR Natural Heritage density data for area within 100 meters of assessment boundary.



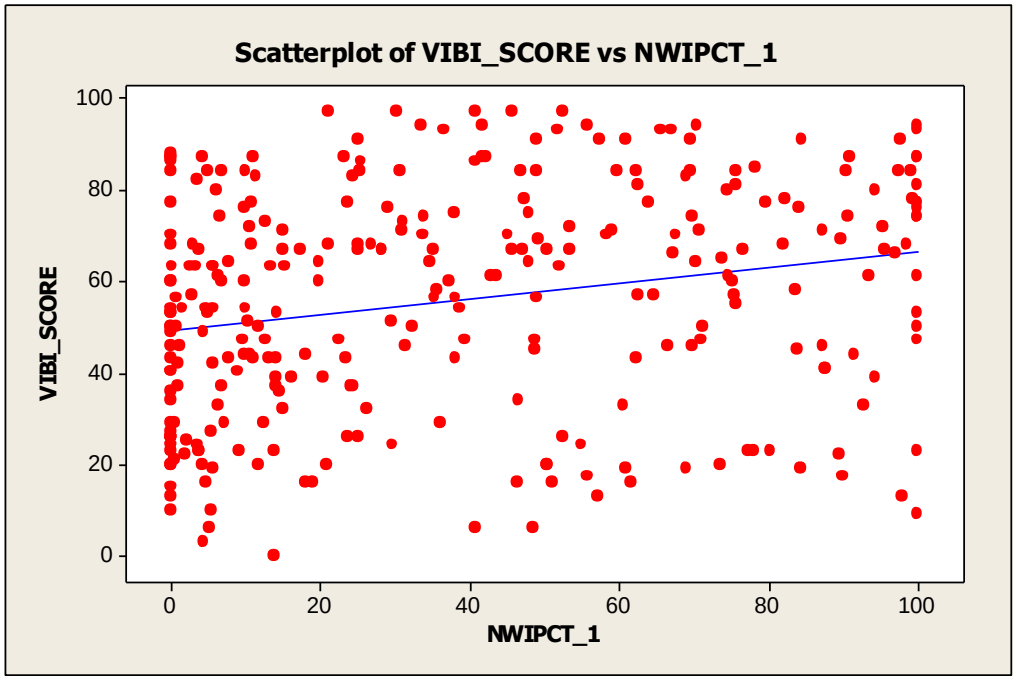

```
The regression equation is
VIBI_SCORE = 53.4 + 2.76 NHDB_1

Predictor     Coef  SE Coef      T      P
Constant    53.423    1.496  35.72  0.000
NHDB_1      2.7604   0.6512   4.24  0.000

S = 23.7860   R-Sq = 5.7%   R-Sq(adj) = 5.4%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   10167  10167  17.97  0.000
Residual Error   296  167469    566
Total            297  177635

Unusual Observations
Obs  NHDB_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 94     9.6       93.00  79.97    5.85     13.03     0.57 X
 95     9.5       81.00  79.74    5.79      1.26     0.05 X
 96     9.6       65.00  79.93    5.84    -14.93    -0.65 X
103     6.5       74.00  71.45    3.92      2.55     0.11 X
117    14.1       91.00  92.38    8.72     -1.38    -0.06 X
130     0.3        3.00  54.28    1.43    -51.28    -2.16R
149    14.5       54.00  93.48    8.97    -39.48    -1.79 X
160    14.1       97.00  92.27    8.69      4.73     0.21 X
189     0.3        6.00  54.19    1.44    -48.19    -2.03R
196    10.9       84.00  83.63    6.69      0.37     0.02 X
211    12.4       87.00  87.68    7.63     -0.68    -0.03 X
230    12.9       83.00  89.03    7.94     -6.03    -0.27 X
288     0.1        6.00  53.81    1.46    -47.81    -2.01R
298     0.1        0.00  53.73    1.47    -53.73    -2.26R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A22. Scatterplot and regression analysis of VIBI score versus ODNR Natural Heritage density data for area from 100 to 350 meters of assessment boundary.



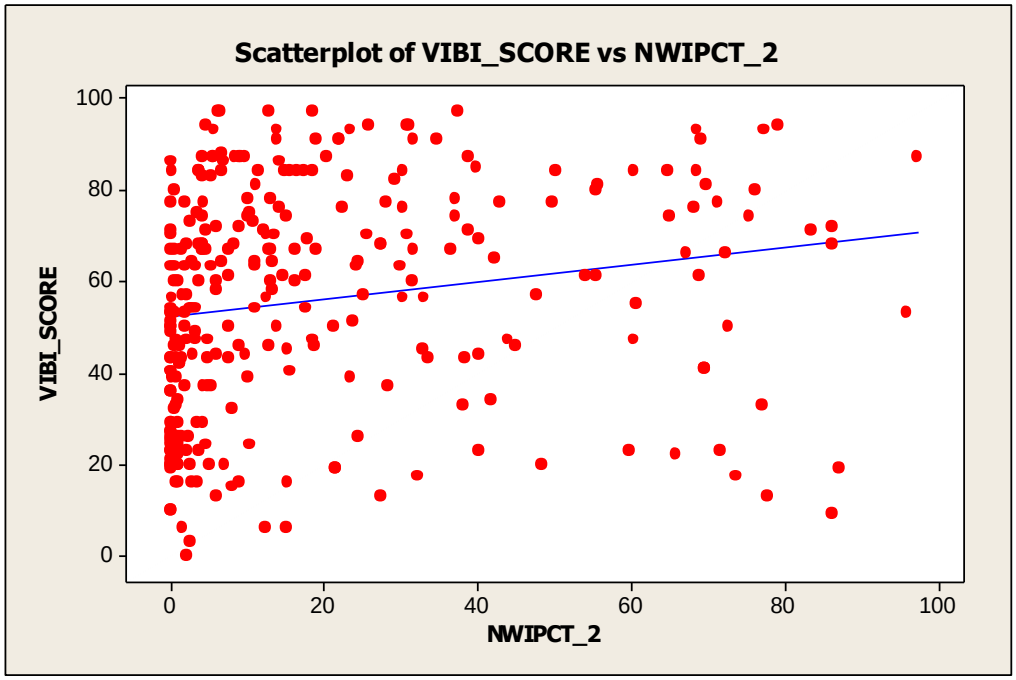

```
The regression equation is
VIBI_SCORE = 53.4 + 2.76 NHDB_2

Predictor     Coef  SE Coef      T      P
Constant    53.422    1.496  35.72  0.000
NHDB_2      2.7629   0.6517   4.24  0.000

S = 23.7858   R-Sq = 5.7%   R-Sq(adj) = 5.4%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   10169  10169  17.97  0.000
Residual Error   296  167466    566
Total            297  177635

Unusual Observations
Obs  NHDB_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 94     9.6       93.00  79.97    5.84     13.03     0.57 X
 95     9.5       81.00  79.72    5.79      1.28     0.06 X
 96     9.6       65.00  79.93    5.84    -14.93    -0.65 X
103     6.5       74.00  71.45    3.92      2.55     0.11 X
117    14.1       91.00  92.40    8.72     -1.40    -0.06 X
130     0.3        3.00  54.28    1.43    -51.28    -2.16R
149    14.5       54.00  93.48    8.97    -39.48    -1.79 X
160    14.1       97.00  92.28    8.69      4.72     0.21 X
189     0.3        6.00  54.19    1.44    -48.19    -2.03R
196    10.9       84.00  83.63    6.69      0.37     0.02 X
211    12.4       87.00  87.69    7.63     -0.69    -0.03 X
230    12.9       83.00  89.04    7.94     -6.04    -0.27 X
288     0.1        6.00  53.81    1.46    -47.81    -2.01R
298     0.1        0.00  53.73    1.47    -53.73    -2.26R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A23. Scatterplot and regression analysis of VIBI score versus NWI data for area within 100 meters of assessment boundary.



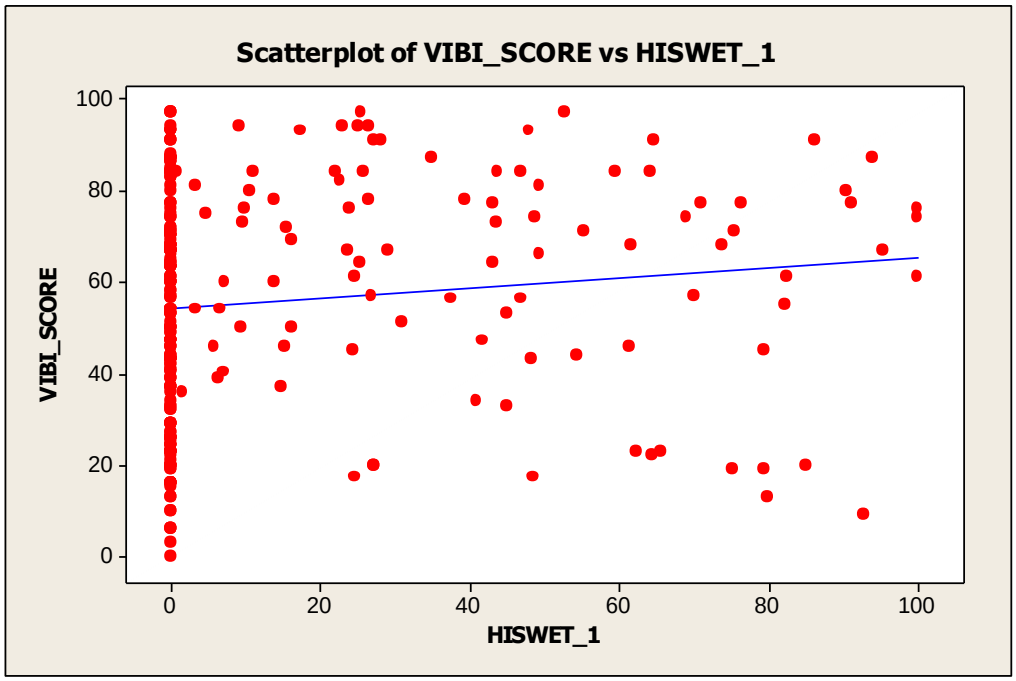

```
The regression equation is
VIBI_SCORE = 49.1 + 0.175 NWIPCT_1

Predictor      Coef  SE Coef      T      P
Constant     49.138    2.107  23.32  0.000
NWIPCT_1    0.17503  0.04133   4.24  0.000

S = 23.7872   R-Sq = 5.7%   R-Sq(adj) = 5.4%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   10149  10149  17.94  0.000
Residual Error   296  167487    566
Total            297  177635

Unusual Observations
Obs  NWIPCT_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
101       100        9.00  66.64    2.89    -57.64    -2.44R
189        41        6.00  56.26    1.38    -50.26    -2.12R
214        98       13.00  66.27    2.81    -53.27    -2.26R
270        90       17.00  64.85    2.53    -47.85    -2.02R
288        48        6.00  57.61    1.44    -51.61    -2.17R
298        14        0.00  51.57    1.71    -51.57    -2.17R

R denotes an observation with a large standardized residual.
```

Figure A24. Scatterplot and regression analysis of VIBI score versus NWI data for area from 100 to 350 meters of assessment boundary.



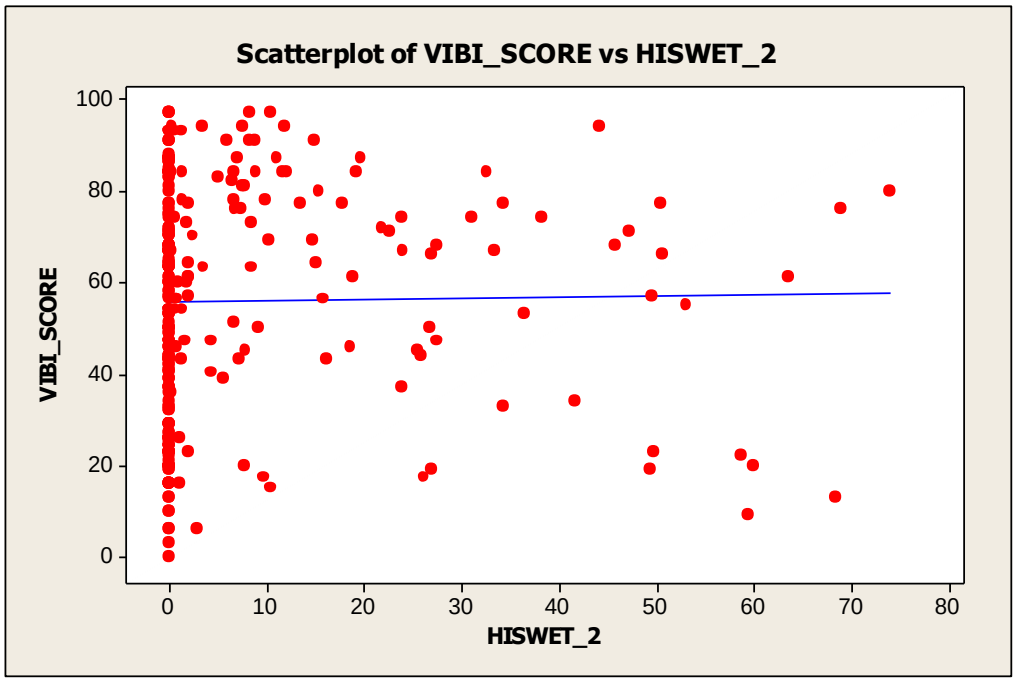

```
The regression equation is
VIBI_SCORE = 52.2 + 0.191 NWIPCT_2

Predictor      Coef  SE Coef      T      P
Constant     52.190    1.805  28.91  0.000
NWIPCT_2    0.19062  0.05907   3.23  0.001

S = 24.0774   R-Sq = 3.4%   R-Sq(adj) = 3.1%

Analysis of Variance
Source            DF        SS      MS      F      P
Regression         1    6037.2  6037.2  10.41  0.001
Residual Error   296  171598.1   579.7
Total            297  177635.3

Unusual Observations
Obs  NWIPCT_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 43      72.4       66.00  65.99    3.43      0.01     0.00 X
 46      97.5       87.00  70.77    4.82     16.23     0.69 X
 94      77.3       93.00  66.92    3.69     26.08     1.10 X
101      86.1        9.00  68.61    4.18    -59.61    -2.51RX
130       2.5        3.00  52.66    1.72    -49.66    -2.07R
188      75.4       74.00  66.57    3.59      7.43     0.31 X
189      15.2        6.00  55.09    1.42    -49.09    -2.04R
199      76.2       80.00  66.72    3.63     13.28     0.56 X
214      77.8       13.00  67.02    3.72    -54.02    -2.27RX
229      79.3       94.00  67.30    3.80     26.70     1.12 X
270      73.6       17.00  66.22    3.49    -49.22    -2.07RX
276      87.2       19.00  68.81    4.24    -49.81    -2.10RX
280      86.3       72.00  68.63    4.19      3.37     0.14 X
282      86.2       68.00  68.62    4.18     -0.62    -0.03 X
286      83.6       71.00  68.12    4.04      2.88     0.12 X
288      12.3        6.00  54.53    1.46    -48.53    -2.02R
290      96.1       53.00  70.50    4.74    -17.50    -0.74 X
292      77.2       33.00  66.91    3.69    -33.91    -1.43 X
294      72.7       50.00  66.05    3.44    -16.05    -0.67 X
298       2.2        0.00  52.60    1.73    -52.60    -2.19R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A25. Scatterplot and regression analysis of VIBI score versus historic wetland data for area within 100 meters of assessment boundary.



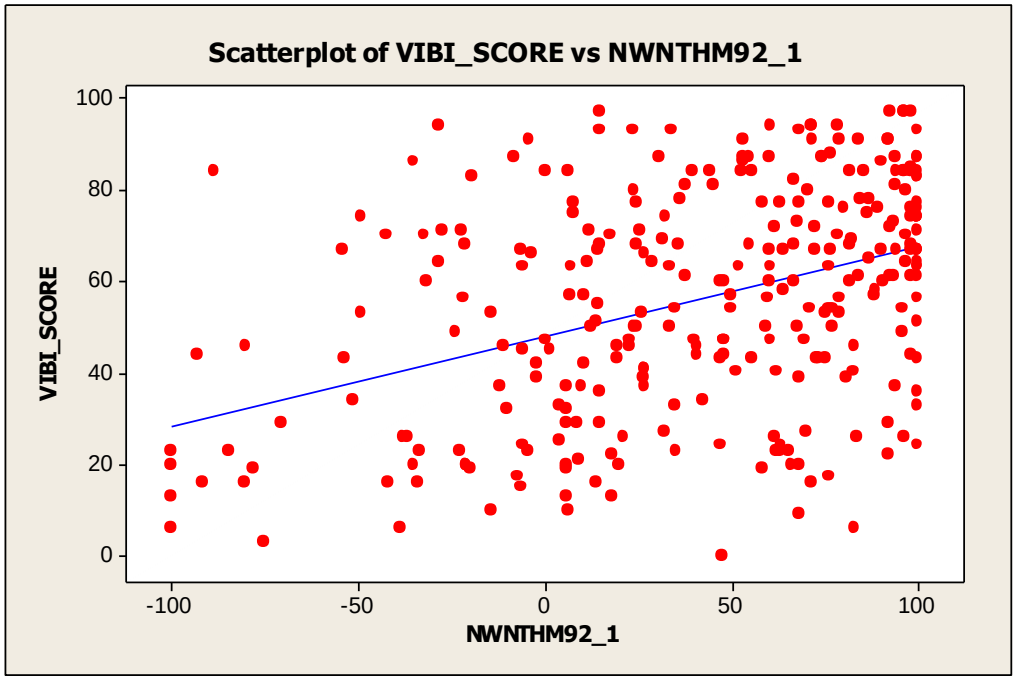

```
The regression equation is
VIBI_SCORE = 54.4 + 0.109 HISWET_1

Predictor      Coef  SE Coef      T      P
Constant     54.382    1.603  33.92  0.000
HISWET_1    0.10877  0.05509   1.97  0.049

S = 24.3376   R-Sq = 1.3%   R-Sq(adj) = 1.0%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    2309.3  2309.3  3.90  0.049
Residual Error   296  175326.0   592.3
Total            297  177635.3

Unusual Observations
Obs  HISWET_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 27       100       61.00  65.25    4.94     -4.25     -0.18 X
 30        79       19.00  63.00    3.87    -44.00     -1.83 X
 48        94       87.00  64.60    4.63     22.40      0.94 X
 60        82       55.00  63.32    4.02     -8.32     -0.35 X
 66        82       61.00  63.35    4.03     -2.35     -0.10 X
 74        79       45.00  63.01    3.87    -18.01     -0.75 X
 93        86       91.00  63.74    4.22     27.26      1.14 X
100        95       67.00  64.74    4.70      2.26      0.09 X
101        93        9.00  64.46    4.56    -55.46     -2.32RX
120        91       77.00  64.30    4.49     12.70      0.53 X
130         0        3.00  54.38    1.60    -51.38     -2.12R
163        85       20.00  63.63    4.17    -43.63     -1.82 X
188       100       74.00  65.25    4.94      8.75      0.37 X
199        90       80.00  64.22    4.45     15.78      0.66 X
205        76       77.00  62.68    3.72     14.32      0.60 X
214        80       13.00  63.08    3.90    -50.08     -2.08RX
231       100       76.00  65.26    4.95     10.74      0.45 X
276        75       19.00  62.56    3.66    -43.56     -1.81 X
282        74       68.00  62.40    3.59      5.60      0.23 X
286        75       71.00  62.59    3.67      8.41      0.35 X
298         0        0.00  54.38    1.60    -54.38     -2.24R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A26. Scatterplot and regression analysis of VIBI score versus historic wetland data for area from 100 to 350 meters of assessment boundary.



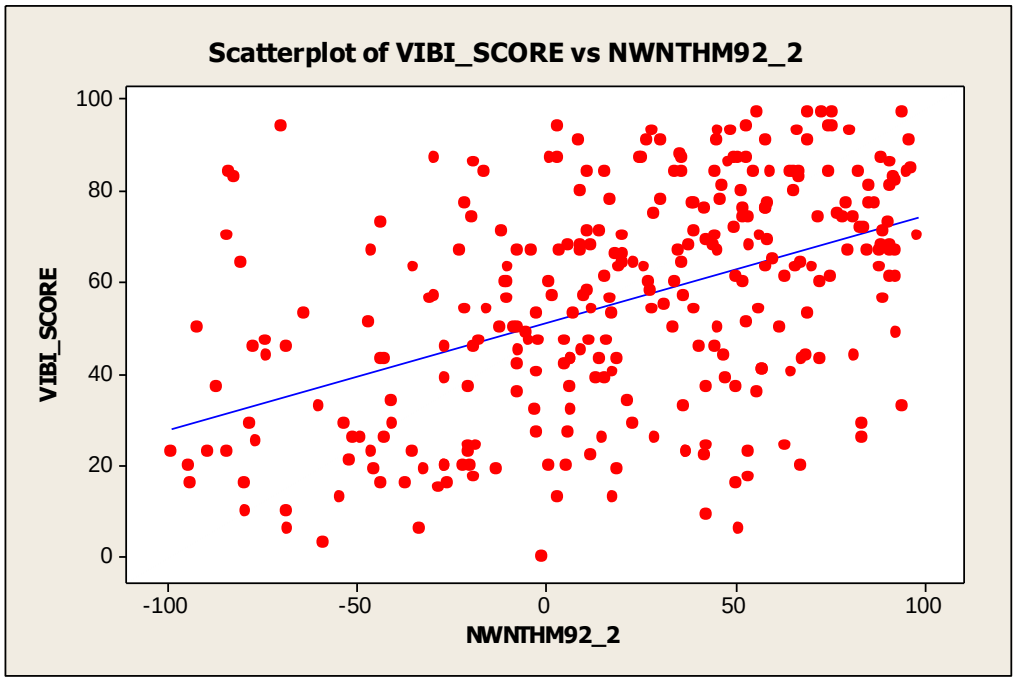

```
The regression equation is
VIBI_SCORE = 55.7 + 0.0290 HISWET_2

Predictor      Coef  SE Coef      T      P
Constant     55.692    1.570  35.48  0.000
HISWET_2    0.02897  0.09869   0.29  0.769

S = 24.4938   R-Sq = 0.0%   R-Sq(adj) = 0.0%

Analysis of Variance
Source            DF        SS     MS     F      P
Regression         1      51.7   51.7  0.09  0.769
Residual Error   296  177583.6  599.9
Total            297  177635.3

Unusual Observations
Obs  HISWET_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 43      50.7       66.00  57.16    4.56      8.84     0.37 X
 60      53.1       55.00  57.23    4.78     -2.23    -0.09 X
 66      63.5       61.00  57.53    5.78      3.47     0.15 X
101      59.5        9.00  57.42    5.39    -48.42    -2.03RX
120      50.5       77.00  57.16    4.54     19.84     0.82 X
123      49.5       57.00  57.13    4.44     -0.13    -0.01 X
130       0.0        3.00  55.69    1.57    -52.69    -2.16R
159       0.0        6.00  55.69    1.57    -49.69    -2.03R
163      60.0       20.00  57.43    5.43    -37.43    -1.57 X
189       2.9        6.00  55.77    1.47    -49.77    -2.04R
199      74.0       80.00  57.84    6.78     22.16     0.94 X
214      68.4       13.00  57.68    6.25    -44.68    -1.89 X
229      44.2       94.00  56.97    3.95     37.03     1.53 X
231      69.0       76.00  57.69    6.30     18.31     0.77 X
275      58.6       22.00  57.39    5.31    -35.39    -1.48 X
276      49.3       19.00  57.12    4.43    -38.12    -1.58 X
278      49.7       23.00  57.13    4.46    -34.13    -1.42 X
282      45.8       68.00  57.02    4.10     10.98     0.45 X
286      47.3       71.00  57.06    4.24     13.94     0.58 X
287      41.6       34.00  56.90    3.72    -22.90    -0.95 X
288       0.0        6.00  55.69    1.57    -49.69    -2.03R
298       0.0        0.00  55.69    1.57    -55.69    -2.28R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A27. Scatterplot and regression analysis of VIBI score versus 1992 NLCD natural minus human-dominated land use data for area within 100 meters of assessment boundary.



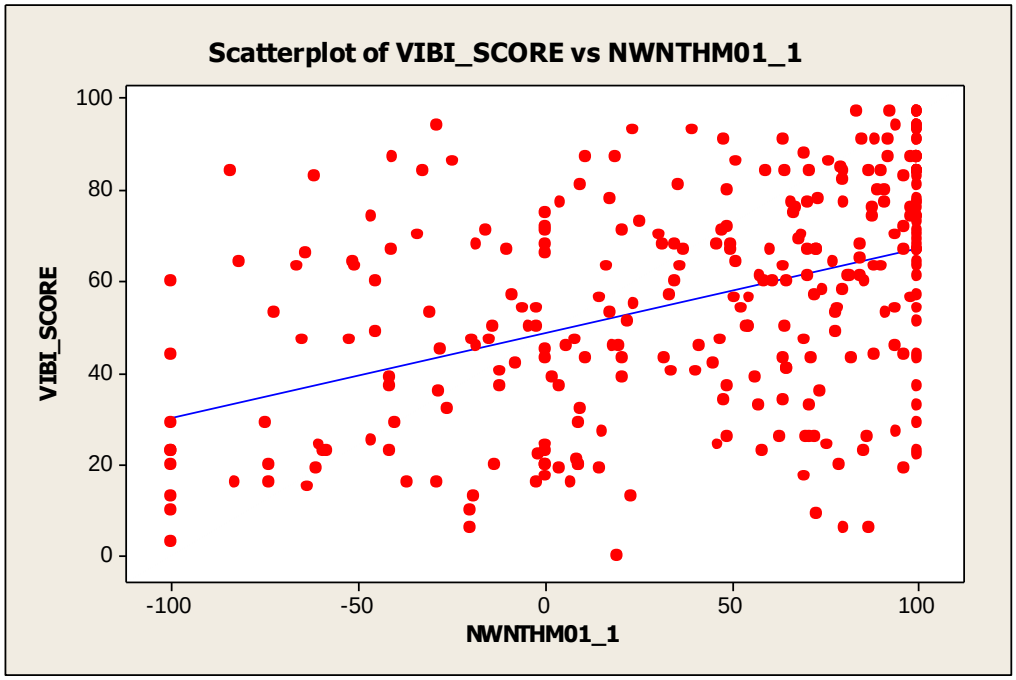

```
The regression equation is
VIBI_SCORE = 47.8 + 0.197 NWNTHM92_1

Predictor       Coef  SE Coef      T      P
Constant      47.803    1.685  28.37  0.000
NWNTHM92_1   0.19657  0.02606   7.54  0.000

S = 22.4361   R-Sq = 16.1%   R-Sq(adj) = 15.8%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   28636  28636  56.89  0.000
Residual Error   296  149000    503
Total            297  177635

Unusual Observations
Obs  NWNTHM92_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 56         -88       84.00  30.50    3.61     53.50     2.42RX
 58         -71       29.00  33.93    3.19     -4.93    -0.22 X
101          68        9.00  61.19    1.48    -52.19    -2.33R
121         -28       94.00  42.25    2.23     51.75     2.32R
130         -75        3.00  33.06    3.29    -30.06    -1.35 X
133          71       16.00  61.79    1.52    -45.79    -2.05R
150          76       17.00  62.74    1.59    -45.74    -2.04R
160          15       97.00  50.73    1.47     46.27     2.07R
164         -35       86.00  41.00    2.36     45.00     2.02R
187         -80       16.00  32.00    3.42    -16.00    -0.72 X
189        -100        6.00  28.15    3.90    -22.15    -1.00 X
190         -78       19.00  32.47    3.37    -13.47    -0.61 X
257        -100       20.00  28.15    3.90     -8.15    -0.37 X
259         -80       46.00  32.17    3.40     13.83     0.62 X
262         -85       23.00  31.17    3.53     -8.17    -0.37 X
273        -100       13.00  28.15    3.90    -15.15    -0.69 X
274         -93       44.00  29.55    3.73     14.45     0.65 X
284        -100       23.00  28.15    3.90     -5.15    -0.23 X
288          83        6.00  64.12    1.70    -58.12    -2.60R
291         -92       16.00  29.81    3.69    -13.81    -0.62 X
298          48        0.00  57.16    1.31    -57.16    -2.55R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A28. Scatterplot and regression analysis of VIBI score versus 1992 natural minus human-dominated land use data for area from 100 to 350 meters of assessment boundary.



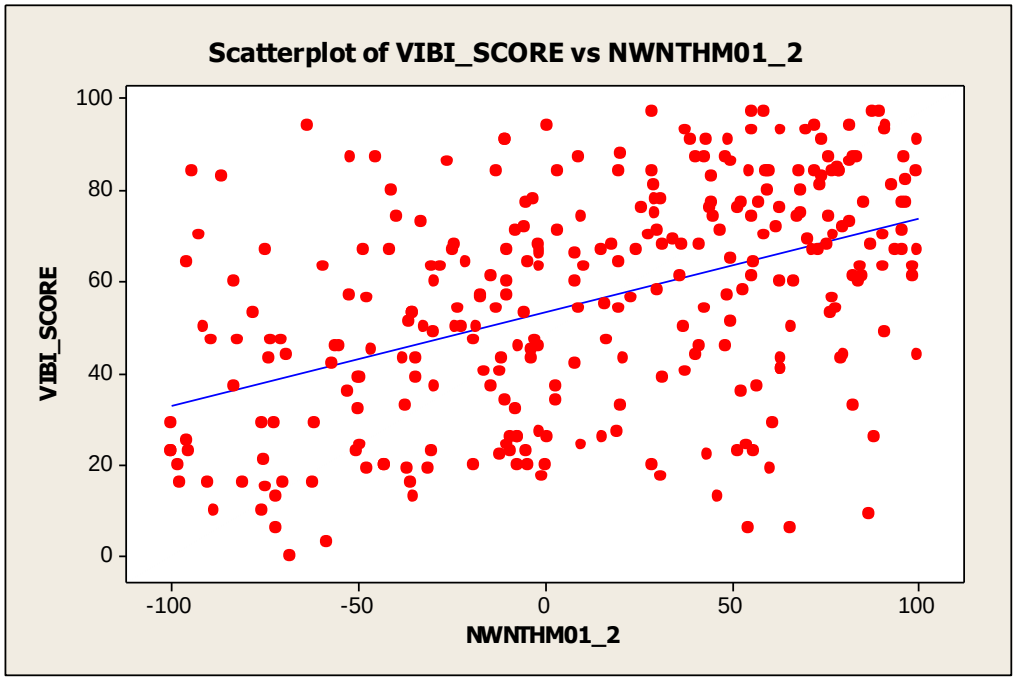

```
The regression equation is
VIBI_SCORE = 51.1 + 0.236 NWNTHM92_2

Predictor       Coef  SE Coef      T      P
Constant      51.070    1.360  37.56  0.000
NWNTHM92_2   0.23556  0.02578   9.14  0.000

S = 21.6351   R-Sq = 22.0%   R-Sq(adj) = 21.7%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   39085  39085  83.50  0.000
Residual Error   296  138551    468
Total            297  177635

Unusual Observations
Obs  NWNTHM92_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 40        83.5       26.00  70.75    2.05    -44.75    -2.08R
 55        67.1       20.00  66.88    1.74    -46.88    -2.17R
 56       -83.5       84.00  31.40    2.96     52.60     2.45R
101        42.5        9.00  61.09    1.38    -52.09    -2.41R
121       -69.9       94.00  34.60    2.65     59.40     2.77R
133        50.1       16.00  62.88    1.47    -46.88    -2.17R
150        53.3       17.00  63.62    1.51    -46.62    -2.16R
156       -82.2       83.00  31.70    2.93     51.30     2.39R
178       -89.2       23.00  30.07    3.09     -7.07    -0.33 X
256       -91.9       50.00  29.43    3.16     20.57     0.96 X
257       -94.4       20.00  28.83    3.22     -8.83    -0.41 X
284       -99.1       23.00  27.73    3.33     -4.73    -0.22 X
288        51.2        6.00  63.14    1.48    -57.14    -2.65R
291       -94.0       16.00  28.94    3.20    -12.94    -0.60 X
298        -1.0        0.00  50.84    1.37    -50.84    -2.35R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A29. Scatterplot and regression analysis of VIBI score versus 2001 NLCD natural minus human-dominated land use data for area within 100 meters of assessment boundary.



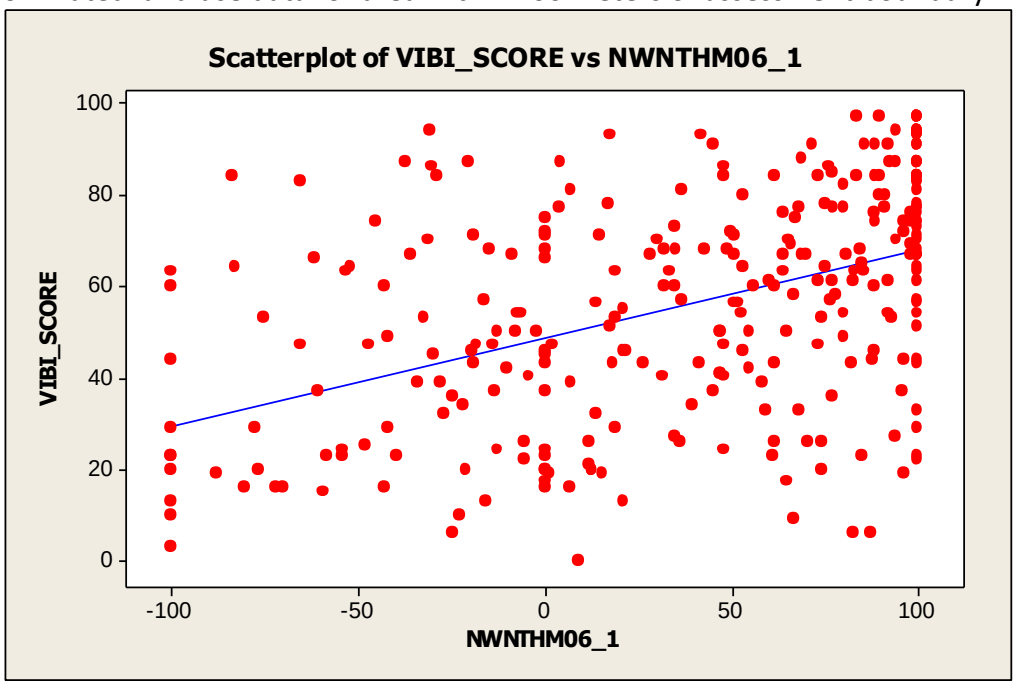

```
The regression equation is
VIBI_SCORE = 48.6 + 0.185 NWNTHM01_1

Predictor       Coef  SE Coef      T      P
Constant      48.556    1.560  31.12  0.000
NWNTHM01_1   0.18548  0.02256   8.22  0.000

S = 22.1027   R-Sq = 18.6%   R-Sq(adj) = 18.3%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   33031  33031  67.61  0.000
Residual Error   296  144605    489
Total            297  177635

Unusual Observations
Obs  NWNTHM01_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  1        -100       60.00  30.01    3.40     29.99     1.37 X
 56         -84       84.00  32.98    3.07     51.02     2.33R
 58        -100       29.00  30.01    3.40     -1.01    -0.05 X
101          73        9.00  62.01    1.48    -53.01    -2.40R
121         -29       94.00  43.20    2.01     50.80     2.31R
130        -100        3.00  30.01    3.40    -27.01    -1.24 X
143        -100       10.00  30.01    3.40    -20.01    -0.92 X
150          69       17.00  61.40    1.44    -44.40    -2.01R
156         -62       83.00  37.11    2.62     45.89     2.09R
189          80        6.00  63.47    1.58    -57.47    -2.61R
203         100       22.00  67.10    1.87    -45.10    -2.05R
232        -100       23.00  30.01    3.40     -7.01    -0.32 X
257        -100       20.00  30.01    3.40    -10.01    -0.46 X
262        -100       23.00  30.01    3.40     -7.01    -0.32 X
263         -40       87.00  41.06    2.21     45.94     2.09R
273        -100       13.00  30.01    3.40    -17.01    -0.78 X
274        -100       44.00  30.01    3.40     13.99     0.64 X
276          96       19.00  66.40    1.81    -47.40    -2.15R
278         100       23.00  67.10    1.87    -44.10    -2.00R
288          87        6.00  64.65    1.67    -58.65    -2.66R
298          20        0.00  52.18    1.36    -52.18    -2.37R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A30. Scatterplot and regression analysis of VIBI score versus 2001 NLCD natural minus human-dominated land use data for area from 100 to 350 meters of assessment boundary.



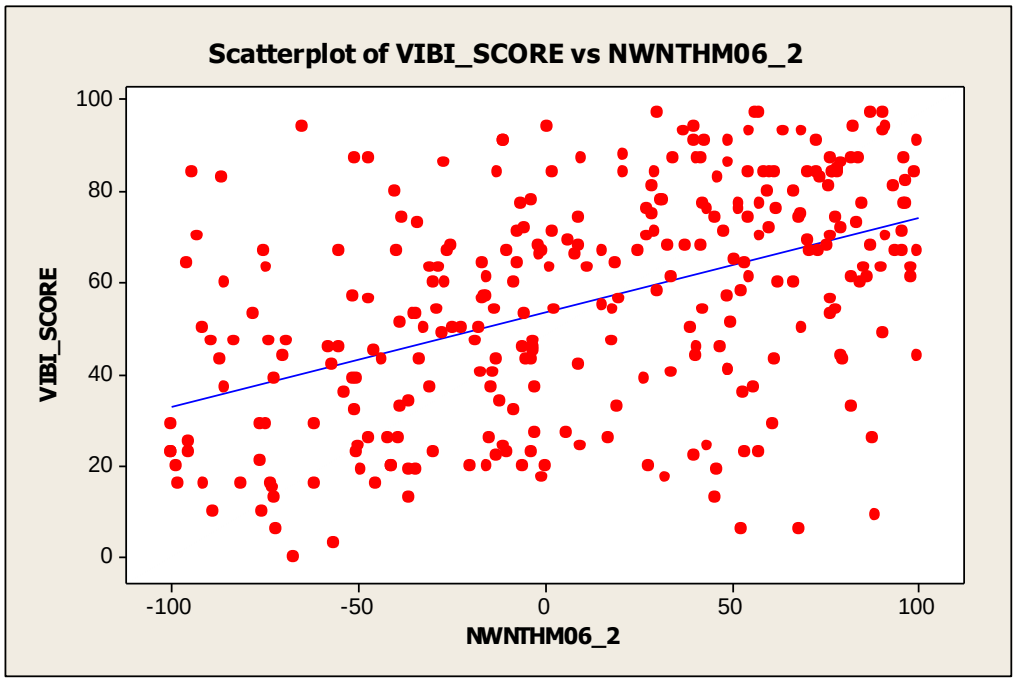

```
The regression equation is
VIBI_SCORE = 53.3 + 0.204 NWNTHM01_2

Predictor       Coef  SE Coef      T      P
Constant      53.269    1.291  41.26  0.000
NWNTHM01_2   0.20398  0.02270   8.99  0.000

S = 21.7131   R-Sq = 21.4%   R-Sq(adj) = 21.2%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   38084  38084  80.78  0.000
Residual Error   296  139551    471
Total            297  177635

Unusual Observations
Obs  NWNTHM01_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 38         -52       87.00  42.73    1.93     44.27     2.05R
 40          88       26.00  71.26    2.12    -45.26    -2.09R
 56         -94       84.00  34.05    2.74     49.95     2.32R
101          87        9.00  71.00    2.10    -62.00    -2.87R
121         -63       94.00  40.33    2.14     53.67     2.48R
156         -87       83.00  35.62    2.58     47.38     2.20R
189          54        6.00  64.37    1.57    -58.37    -2.70R
214          47       13.00  62.80    1.47    -49.80    -2.30R
276          60       19.00  65.59    1.66    -46.59    -2.15R
288          66        6.00  66.68    1.74    -60.68    -2.80R

R denotes an observation with a large standardized residual.
```

Figure A31. Scatterplot and regression analysis of VIBI score versus 2006 NLCD natural minus human-dominated land use data for area within 100 meters of assessment boundary.



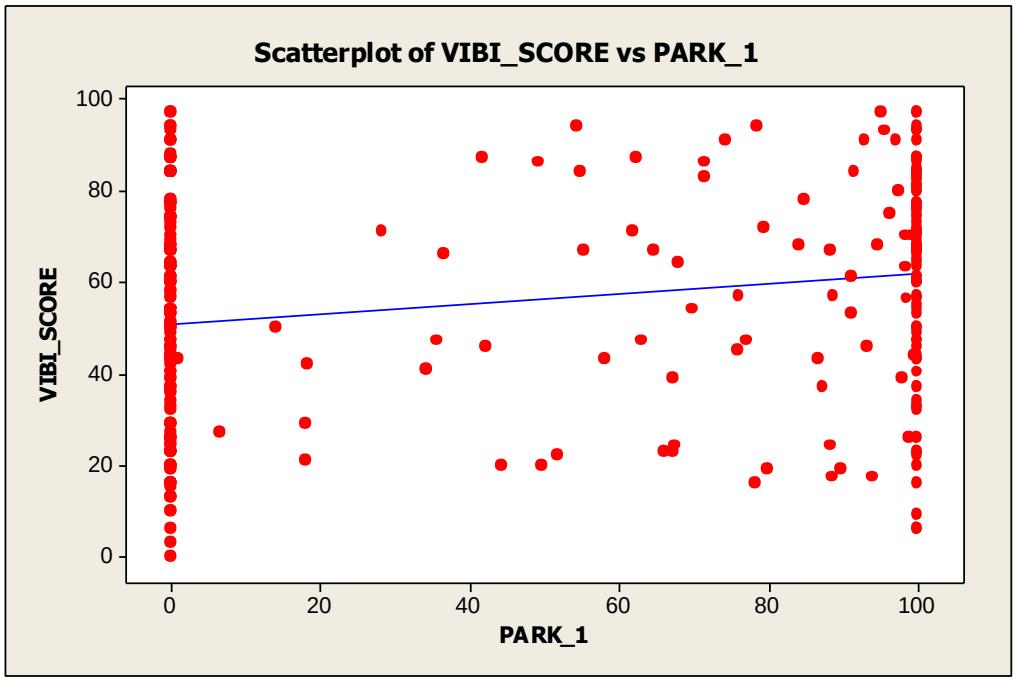

```
The regression equation is
VIBI_SCORE = 48.7 + 0.192 NWNTHM06_1

Predictor       Coef  SE Coef      T      P
Constant      48.747    1.504  32.41  0.000
NWNTHM06_1   0.19202  0.02190   8.77  0.000

S = 21.8253   R-Sq = 20.6%   R-Sq(adj) = 20.4%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   36637  36637  76.91  0.000
Residual Error   296  140998    476
Total            297  177635

Unusual Observations
Obs  NWNTHM06_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
  1        -100       60.00  29.54    3.26     30.46     1.41 X
 11        -100       63.00  29.54    3.26     33.46     1.55 X
 56         -84       84.00  32.68    2.93     51.32     2.37R
 58        -100       29.00  29.54    3.26     -0.54    -0.03 X
101          67        9.00  61.55    1.42    -52.55    -2.41R
121         -30       94.00  42.90    1.95     51.10     2.35R
130        -100        3.00  29.54    3.26    -26.54    -1.23 X
143        -100       10.00  29.54    3.26    -19.54    -0.91 X
150          65       17.00  61.17    1.40    -44.17    -2.03R
156         -65       83.00  36.19    2.58     46.81     2.16R
189          82        6.00  64.56    1.61    -58.56    -2.69R
203         100       22.00  67.95    1.87    -45.95    -2.11R
232        -100       23.00  29.54    3.26     -6.54    -0.30 X
257        -100       20.00  29.54    3.26     -9.54    -0.44 X
262        -100       23.00  29.54    3.26     -6.54    -0.30 X
263         -37       87.00  41.59    2.06     45.41     2.09R
273        -100       13.00  29.54    3.26    -16.54    -0.77 X
274        -100       44.00  29.54    3.26     14.46     0.67 X
276          96       19.00  67.22    1.81    -48.22    -2.22R
278         100       23.00  67.95    1.87    -44.95    -2.07R
288          87        6.00  65.46    1.67    -59.46    -2.73R
298           9        0.00  50.53    1.40    -50.53    -2.32R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A32. Scatterplot and regression analysis of VIBI score versus 2006 NLCD natural minus human-dominated land use data for area from 100 to 350 meters of assessment boundary.



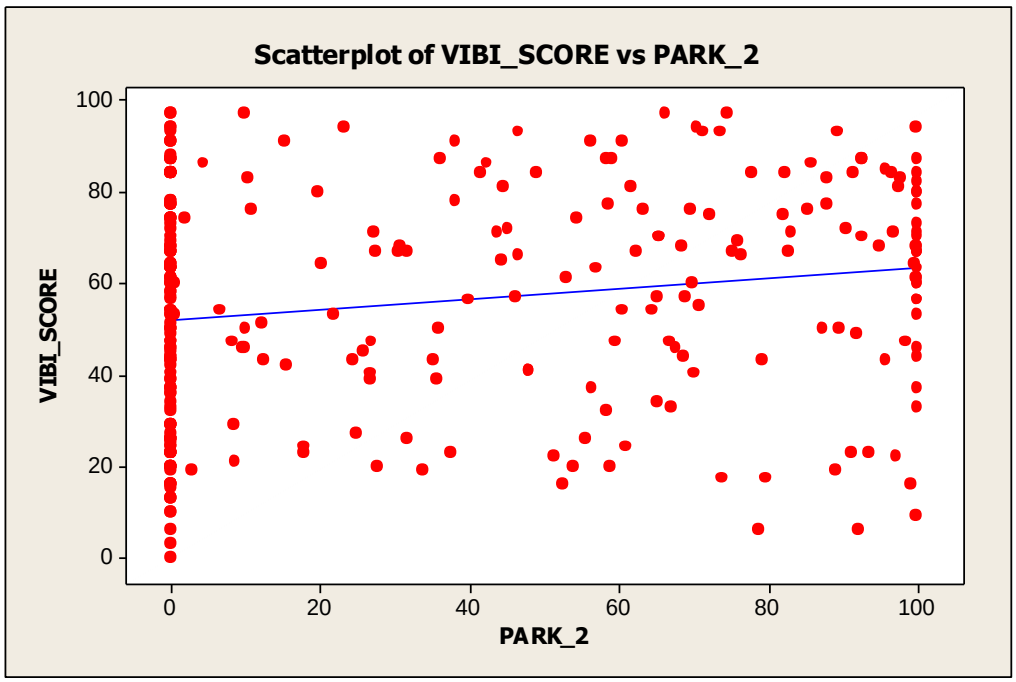

```
The regression equation is
VIBI_SCORE = 53.6 + 0.207 NWNTHM06_2

Predictor       Coef  SE Coef      T      P
Constant      53.603    1.274  42.08  0.000
NWNTHM06_2   0.20652  0.02230   9.26  0.000

S = 21.5711   R-Sq = 22.5%   R-Sq(adj) = 22.2%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   39902  39902  85.75  0.000
Residual Error   296  137733    465
Total            297  177635

Unusual Observations
Obs  NWNTHM06_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 38         -51       87.00  43.15    1.86     43.85     2.04R
 40          88       26.00  71.72    2.12    -45.72    -2.13R
 56         -94       84.00  34.13    2.66     49.87     2.33R
101          89        9.00  71.92    2.14    -62.92    -2.93R
121         -65       94.00  40.26    2.10     53.74     2.50R
150          32       17.00  60.28    1.34    -43.28    -2.01R
156         -86       83.00  35.76    2.51     47.24     2.21R
189          52        6.00  64.43    1.55    -58.43    -2.72R
214          46       13.00  63.03    1.47    -50.03    -2.32R
263         -47       87.00  43.90    1.80     43.10     2.01R
276          46       19.00  63.10    1.47    -44.10    -2.05R
288          68        6.00  67.66    1.78    -61.66    -2.87R

R denotes an observation with a large standardized residual.
```

Figure A33. Scatterplot and regression analysis of VIBI score versus percent parkland for area within 100 meters of assessment boundary.



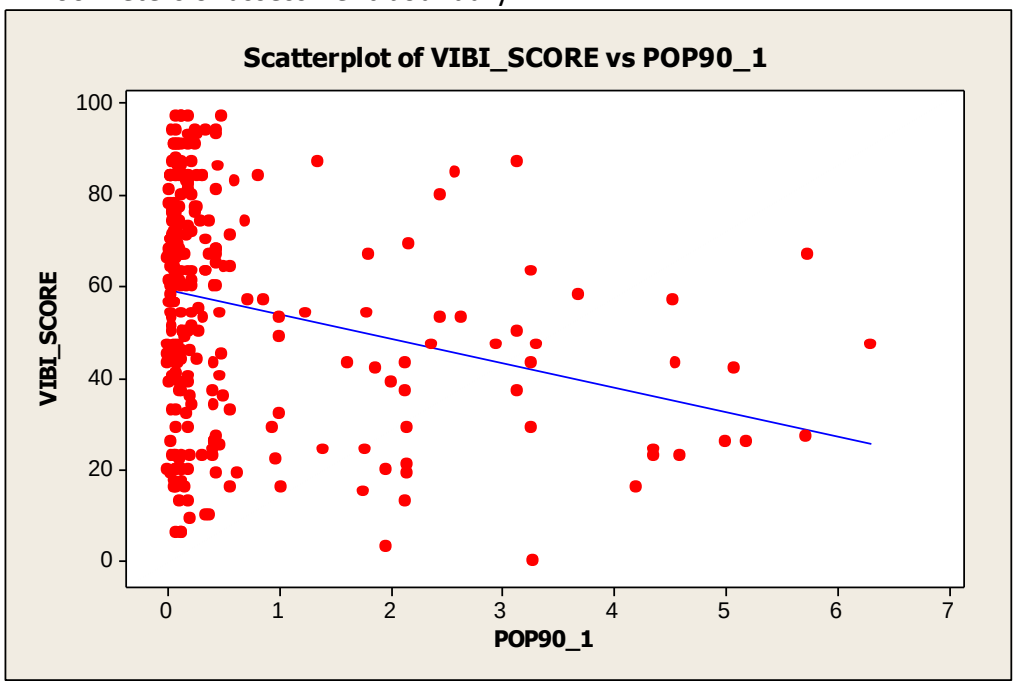

```
The regression equation is
VIBI_SCORE = 50.7 + 0.112 PARK_1

Predictor      Coef  SE Coef      T      P
Constant     50.717    1.958  25.90  0.000
PARK_1      0.11193  0.02991   3.74  0.000

S = 23.9377   R-Sq = 4.5%   R-Sq(adj) = 4.2%

Analysis of Variance
Source            DF        SS      MS      F      P
Regression         1    8022.9  8022.9  14.00  0.000
Residual Error   296  169612.5   573.0
Total            297  177635.3

Unusual Observations
Obs  PARK_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
101     100        9.00  61.91    2.12    -52.91     -2.22R
130       0        3.00  50.72    1.96    -47.72     -2.00R
189     100        6.00  61.91    2.12    -55.91     -2.34R
288     100        6.00  61.89    2.12    -55.89     -2.34R
298       0        0.00  50.72    1.96    -50.72     -2.13R

R denotes an observation with a large standardized residual.
```

Figure A34. Scatterplot and regression analysis of VIBI score versus percent parkland for area from 100 to 350 meters of assessment boundary.



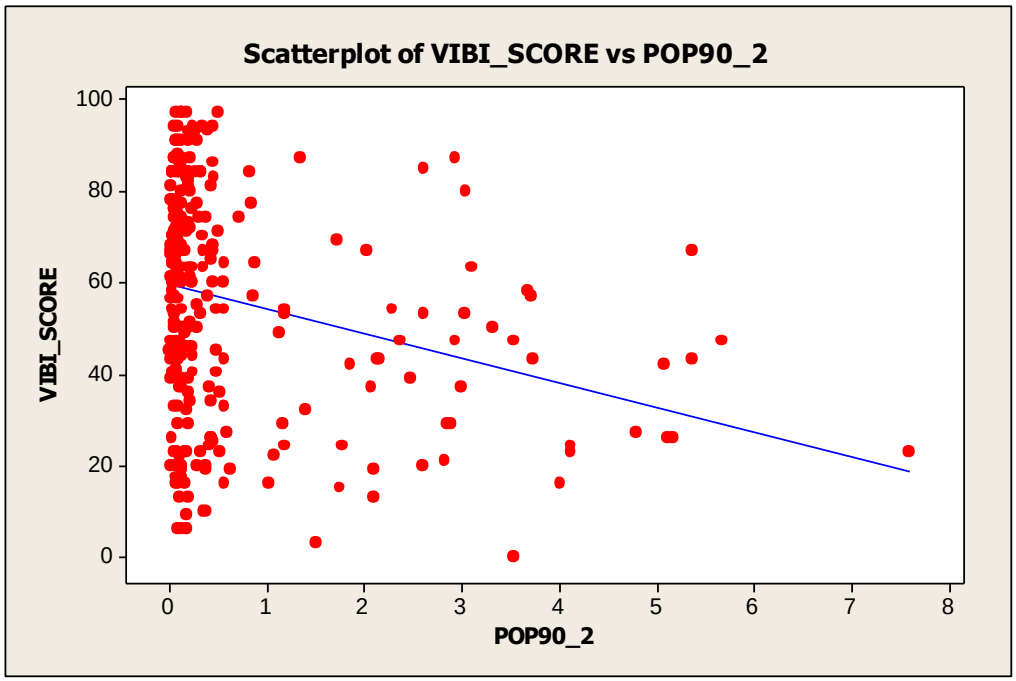

```
The regression equation is
VIBI_SCORE = 51.9 + 0.114 PARK_2

Predictor      Coef  SE Coef      T      P
Constant     51.865    1.889  27.45  0.000
PARK_2      0.11411  0.03611   3.16  0.002

S = 24.0943   R-Sq = 3.3%   R-Sq(adj) = 2.9%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    5797.2  5797.2  9.99  0.002
Residual Error   296  171838.2   580.5
Total            297  177635.3

Unusual Observations
Obs  PARK_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
101     100        9.00  63.23    2.71    -54.23     -2.27R
130       0        3.00  51.86    1.89    -48.86     -2.03R
189      92        6.00  62.36    2.48    -56.36     -2.35R
288      79        6.00  60.83    2.10    -54.83     -2.28R
298       0        0.00  51.86    1.89    -51.86     -2.16R

R denotes an observation with a large standardized residual.
```

Figure A35. Scatterplot and regression analysis of VIBI score versus 1990 population density for area within 100 meters of assessment boundary.



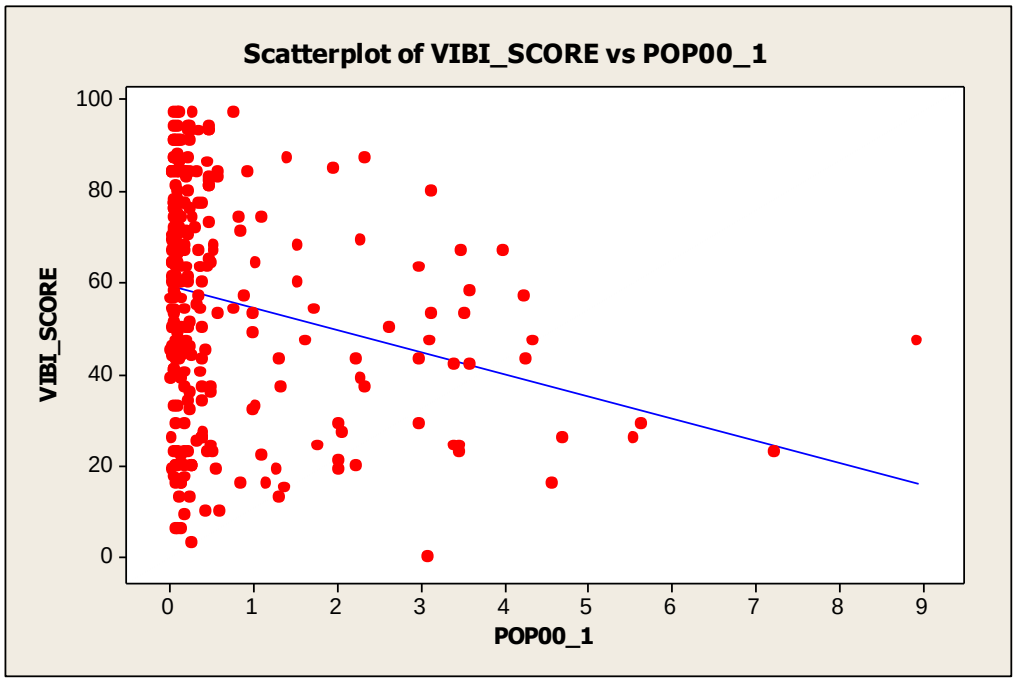

```
The regression equation is
VIBI_SCORE = 59.4 - 5.38 POP90_1

Predictor     Coef  SE Coef      T      P
Constant    59.351    1.567  37.87  0.000
POP90_1     -5.385    1.179  -4.57  0.000

S = 23.6778   R-Sq = 6.6%   R-Sq(adj) = 6.3%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   11686  11686  20.84  0.000
Residual Error   296  165949    561
Total            297  177635

Unusual Observations
Obs  POP90_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 11     3.27       63.00  41.76    3.39     21.24     0.91 X
 12     3.69       58.00  39.49    3.85     18.51     0.79 X
 23     5.18       26.00  31.46    5.52     -5.46    -0.24 X
 31     0.37       10.00  57.34    1.41    -47.34    -2.00R
 35     5.72       27.00  28.56    6.14     -1.56    -0.07 X
 67     5.07       42.00  32.03    5.40      9.97     0.43 X
 82     4.35       23.00  35.91    4.59    -12.91    -0.56 X
 83     4.35       24.00  35.91    4.59    -11.91    -0.51 X
101     0.20        9.00  58.26    1.47    -49.26    -2.08R
143     0.35       10.00  57.45    1.41    -47.45    -2.01R
159     0.13        6.00  58.66    1.50    -52.66    -2.23R
185     3.27       43.00  41.76    3.39      1.24     0.05 X
189     0.09        6.00  58.88    1.52    -52.88    -2.24R
197     4.53       57.00  34.96    4.79     22.04     0.95 X
198     4.55       43.00  34.83    4.81      8.17     0.35 X
200     5.73       67.00  28.52    6.15     38.48     1.68 X
201     6.30       47.00  25.44    6.81     21.56     0.95 X
207     3.27       29.00  41.76    3.39    -12.76    -0.54 X
226     4.99       26.00  32.46    5.31     -6.46    -0.28 X
232     4.60       23.00  34.59    4.86    -11.59    -0.50 X
267     4.20       16.00  36.72    4.42    -20.72    -0.89 X
288     0.14        6.00  58.62    1.50    -52.62    -2.23R
297     3.30       47.00  41.56    3.42      5.44     0.23 X
298     3.27        0.00  41.72    3.39    -41.72    -1.78 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A36. Scatterplot and regression analysis of VIBI score versus 1990 population density for area from 100 to 350 meters of assessment boundary.



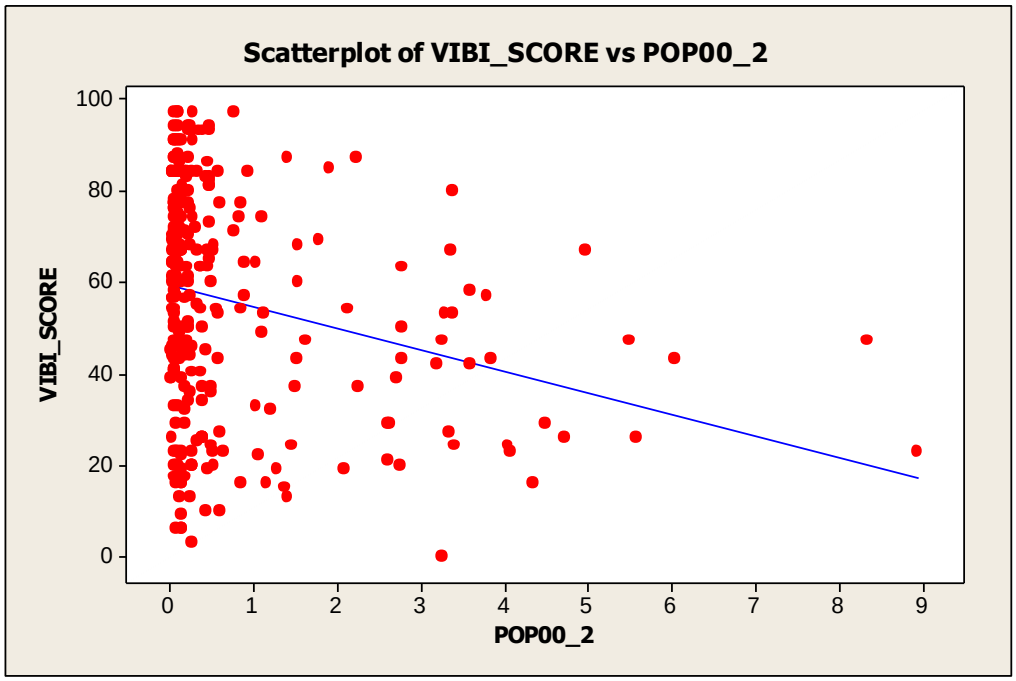

```
The regression equation is
VIBI_SCORE = 59.5 - 5.39 POP90_2

Predictor     Coef  SE Coef      T      P
Constant    59.488    1.565  38.01  0.000
POP90_2     -5.387    1.137  -4.74  0.000

S = 23.6185   R-Sq = 7.0%   R-Sq(adj) = 6.7%

Analysis of Variance
Source            DF      SS      MS      F      P
Regression         1   12516   12516  22.44  0.000
Residual Error   296  165119     558
Total            297  177635

Unusual Observations
Obs   POP90_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 12      3.69       58.00  39.61    3.70     18.39     0.79 X
 23      5.17       26.00  31.62    5.30     -5.62    -0.24 X
 31      0.37       10.00  57.47    1.41    -47.47    -2.01R
 35      4.79       27.00  33.70    4.88     -6.70    -0.29 X
 67      5.07       42.00  32.16    5.19      9.84     0.43 X
 82      4.14       23.00  37.20    4.18    -14.20    -0.61 X
 83      4.14       24.00  37.20    4.18    -13.20    -0.57 X
101      0.18        9.00  58.50    1.48    -49.50    -2.10R
130      1.51        3.00  51.34    1.67    -48.34    -2.05R
143      0.35       10.00  57.58    1.41    -47.58    -2.02R
159      0.17        6.00  58.56    1.48    -52.56    -2.23R
185      5.36       43.00  30.59    5.51     12.41     0.54 X
189      0.09        6.00  59.02    1.52    -53.02    -2.25R
197      3.71       57.00  39.50    3.72     17.50     0.75 X
198      3.73       43.00  39.39    3.74      3.61     0.15 X
200      5.36       67.00  30.61    5.51     36.39     1.58 X
201      5.67       47.00  28.95    5.85     18.05     0.79 X
226      5.11       26.00  31.94    5.24     -5.94    -0.26 X
232      7.60       23.00  18.53    8.00      4.47     0.20 X
267      4.03       16.00  37.79    4.06    -21.79    -0.94 X
288      0.14        6.00  58.76    1.50    -52.76    -2.24R
297      3.53       47.00  40.48    3.53      6.52     0.28 X
298      3.53        0.00  40.47    3.53    -40.47    -1.73 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A37. Scatterplot and regression analysis of VIBI score versus 2000 population density for area within 100 meters of assessment boundary.



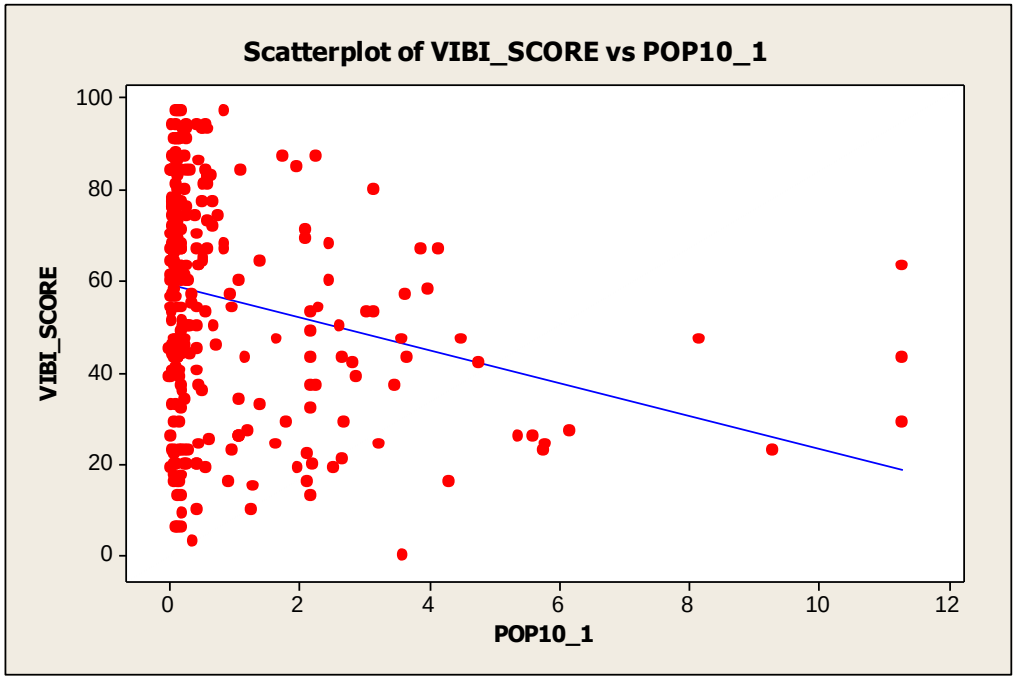

```
The regression equation is
VIBI_SCORE = 59.2 - 4.83 POP00_1

Predictor     Coef  SE Coef      T      P
Constant    59.193    1.579  37.48  0.000
POP00_1     -4.828    1.129  -4.27  0.000

S = 23.7744   R-Sq = 5.8%   R-Sq(adj) = 5.5%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   10330  10330  18.28  0.000
Residual Error   296  167306    565
Total            297  177635

Unusual Observations
Obs  POP00_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 12     3.59       58.00  41.84    3.56     16.16     0.69 X
 23     4.70       26.00  36.51    4.74    -10.51    -0.45 X
 39     3.49       67.00  42.36    3.45     24.64     1.05 X
 58     5.63       29.00  32.00    5.75     -3.00    -0.13 X
 67     3.59       42.00  41.84    3.56      0.16     0.01 X
 82     3.46       23.00  42.48    3.43    -19.48    -0.83 X
 83     3.46       24.00  42.48    3.43    -18.48    -0.79 X
101     0.18        9.00  58.34    1.49    -49.34    -2.08R
130     0.28        3.00  57.85    1.45    -54.85    -2.31R
159     0.10        6.00  58.69    1.53    -52.69    -2.22R
189     0.08        6.00  58.80    1.54    -52.80    -2.23R
197     4.24       57.00  38.70    4.25     18.30     0.78 X
198     4.26       43.00  38.63    4.27      4.37     0.19 X
200     3.98       67.00  39.97    3.97     27.03     1.15 X
201     4.33       47.00  38.26    4.35      8.74     0.37 X
224     3.53       53.00  42.17    3.49     10.83     0.46 X
226     5.57       26.00  32.31    5.68     -6.31    -0.27 X
232     7.24       23.00  24.24    7.53     -1.24    -0.05 X
235     8.95       47.00  15.97    9.44     31.03     1.42 X
267     4.57       16.00  37.11    4.60    -21.11    -0.91 X
288     0.14        6.00  58.53    1.51    -52.53    -2.21R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A38. Scatterplot and regression analysis of VIBI score versus 2000 population density for area from 100 to 350 meters of assessment boundary.



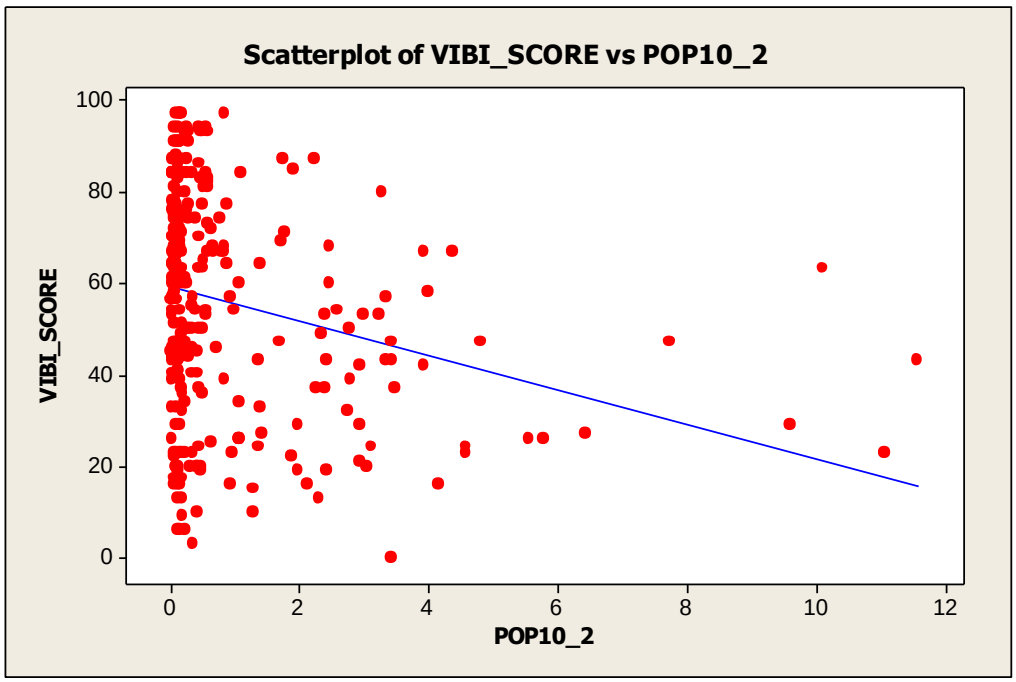

```
The regression equation is
VIBI_SCORE = 59.3 - 4.70 POP00_2

Predictor     Coef  SE Coef      T      P
Constant    59.294    1.574  37.67  0.000
POP00_2     -4.698    1.060  -4.43  0.000

S = 23.7222   R-Sq = 6.2%   R-Sq(adj) = 5.9%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   11063  11063  19.66  0.000
Residual Error   296  166572    563
Total            297  177635

Unusual Observations
Obs  POP00_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 23     4.71       26.00  37.15    4.44    -11.15     -0.48 X
 58     4.48       29.00  38.23    4.21     -9.23     -0.40 X
 82     4.06       23.00  40.20    3.80    -17.20     -0.73 X
 83     4.06       24.00  40.23    3.79    -16.23     -0.69 X
101     0.15        9.00  58.58    1.50    -49.58     -2.09R
130     0.26        3.00  58.07    1.46    -55.07     -2.33R
159     0.16        6.00  58.55    1.50    -52.55     -2.22R
185     6.04       43.00  30.90    5.80     12.10      0.53 X
189     0.08        6.00  58.91    1.53    -52.91     -2.24R
197     3.80       57.00  41.43    3.54     15.57      0.66 X
198     3.85       43.00  41.23    3.58      1.77      0.08 X
200     4.98       67.00  35.91    4.71     31.09      1.34 X
201     5.49       47.00  33.50    5.23     13.50      0.58 X
226     5.58       26.00  33.07    5.33     -7.07     -0.31 X
232     8.95       23.00  17.22    8.83      5.78      0.26 X
235     8.35       47.00  20.06    8.20     26.94      1.21 X
267     4.35       16.00  38.87    4.08    -22.87     -0.98 X
288     0.14        6.00  58.65    1.51    -52.65     -2.22R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A39. Scatterplot and regression analysis of VIBI score versus 2010 population density for area within 100 meters of assessment boundary.



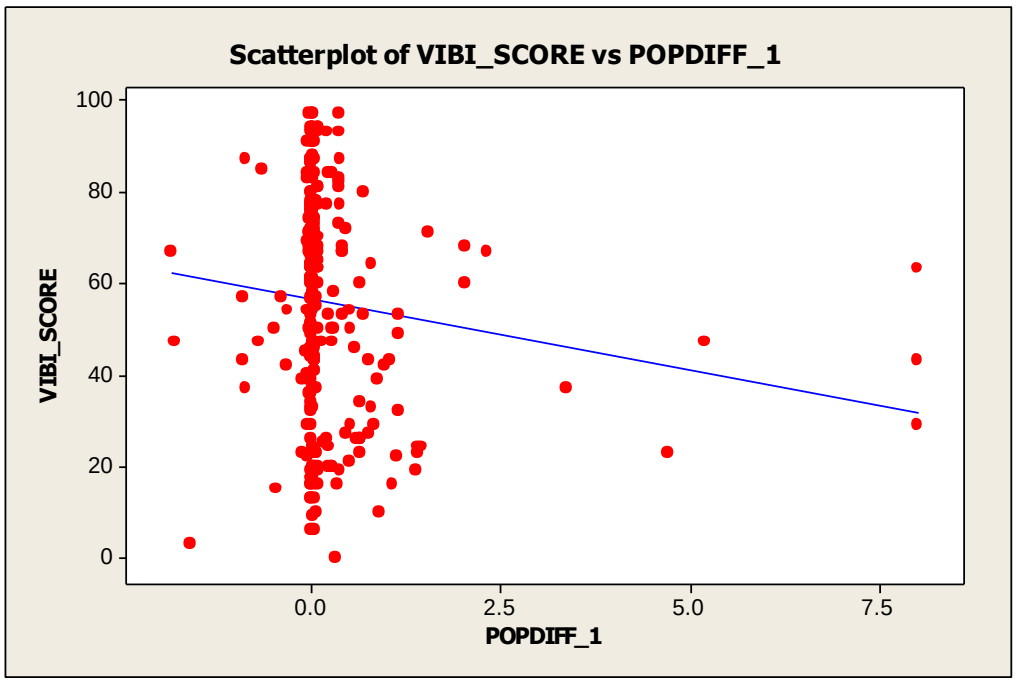

```
The regression equation is
VIBI_SCORE = 59.1 - 3.58 POP10_1

Predictor      Coef  SE Coef      T      P
Constant     59.102    1.554  38.04  0.000
POP10_1     -3.5818   0.8082  -4.43  0.000

S = 23.7229   R-Sq = 6.2%   R-Sq(adj) = 5.9%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   11053  11053  19.64  0.000
Residual Error   296  166582    563
Total            297  177635

Unusual Observations
Obs  POP10_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 11     11.3       63.00  18.72    8.50     44.28      2.00 X
 23      5.4       26.00  39.80    3.88    -13.80     -0.59 X
 35      6.2       27.00  36.98    4.48     -9.98     -0.43 X
 67      4.8       42.00  42.06    3.41     -0.06     -0.00 X
 82      5.8       23.00  38.44    4.17    -15.44     -0.66 X
 83      5.8       24.00  38.42    4.18    -14.42     -0.62 X
101      0.2        9.00  58.33    1.48    -49.33     -2.08R
130      0.4        3.00  57.75    1.44    -54.75     -2.31R
143      0.4       10.00  57.58    1.43    -47.58     -2.01R
159      0.2        6.00  58.43    1.49    -52.43     -2.21R
185     11.3       43.00  18.67    8.51     24.33      1.10 X
189      0.1        6.00  58.69    1.51    -52.69     -2.23R
207     11.3       29.00  18.72    8.50     10.28      0.46 X
226      5.6       26.00  39.04    4.04    -13.04     -0.56 X
232      9.3       23.00  25.78    6.93     -2.78     -0.12 X
235      8.2       47.00  29.89    6.03     17.11      0.75 X
288      0.1        6.00  58.59    1.50    -52.59     -2.22R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A40. Scatterplot and regression analysis of VIBI score versus 2010 population density for area from 100 to 350 meters of assessment boundary.



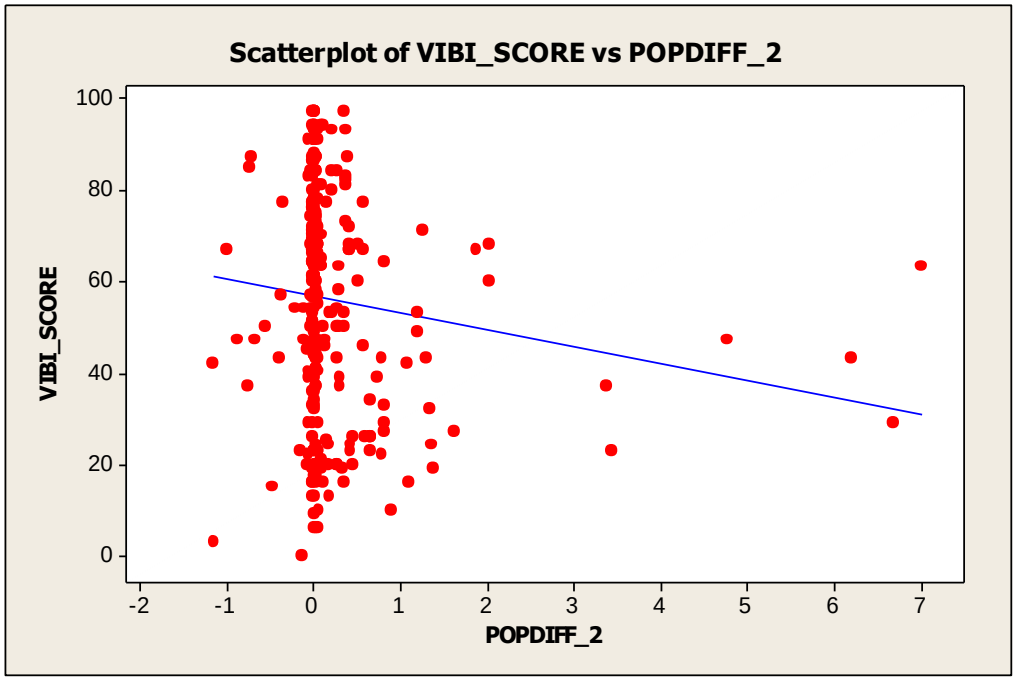

```
The regression equation is
VIBI_SCORE = 59.3 - 3.77 POP10_2

Predictor      Coef  SE Coef      T      P
Constant     59.302    1.561  37.98  0.000
POP10_2     -3.7688   0.8240  -4.57  0.000

S = 23.6750   R-Sq = 6.6%   R-Sq(adj) = 6.3%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   11726  11726  20.92  0.000
Residual Error   296  165909    561
Total            297  177635

Unusual Observations
Obs  POP10_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 11     10.1       63.00  21.22    7.70     41.78     1.87 X
 23      5.8       26.00  37.54    4.24    -11.54    -0.50 X
 35      6.4       27.00  35.09    4.75     -8.09    -0.35 X
101      0.2        9.00  58.54    1.49    -49.54    -2.10R
130      0.4        3.00  57.90    1.44    -54.90    -2.32R
143      0.4       10.00  57.71    1.43    -47.71    -2.02R
159      0.2        6.00  58.46    1.48    -52.46    -2.22R
185     11.6       43.00  15.69    8.90     27.31     1.24 X
189      0.1        6.00  58.87    1.52    -52.87    -2.24R
201      4.8       47.00  41.24    3.48      5.76     0.25 X
207      9.6       29.00  23.20    7.28      5.80     0.26 X
226      5.6       26.00  38.33    4.08    -12.33    -0.53 X
232     11.1       23.00  17.65    8.47      5.35     0.24 X
235      7.7       47.00  30.16    5.79     16.84     0.73 X
288      0.1        6.00  58.76    1.51    -52.76    -2.23R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A41. Scatterplot and regression analysis of VIBI score versus difference between 1990 and 2010 population densities for area within 100 meters of assessment boundary.



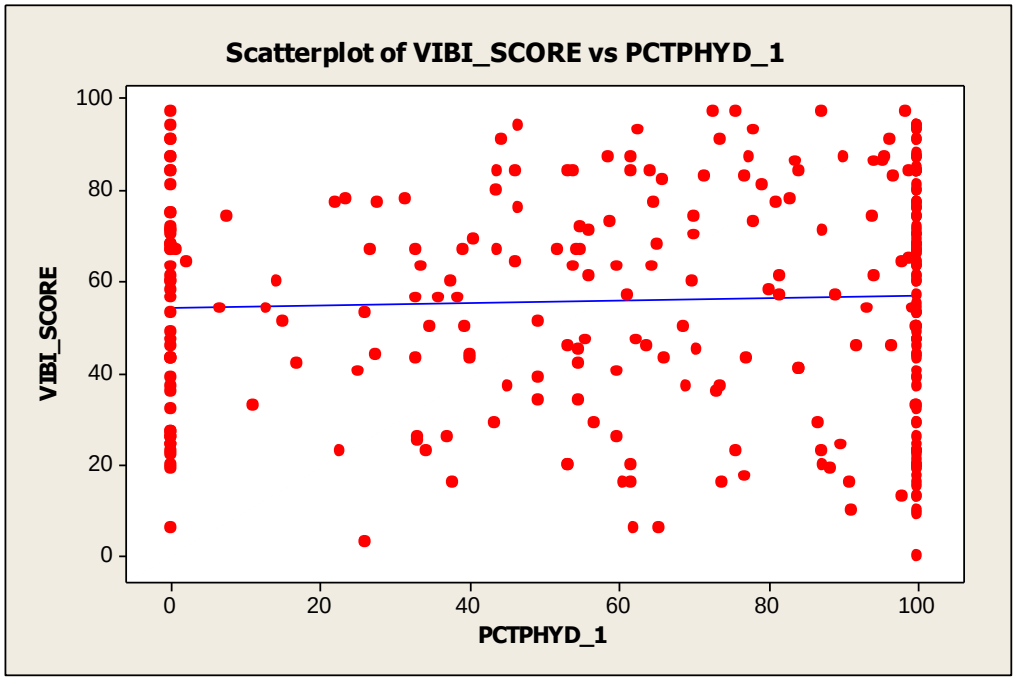

```
The regression equation is
VIBI_SCORE = 56.7 - 3.11 POPDIFF_1

Predictor     Coef  SE Coef      T      P
Constant    56.678    1.453  39.01  0.000
POPDIFF_1   -3.107    1.415  -2.20  0.029

S = 24.3004   R-Sq = 1.6%   R-Sq(adj) = 1.3%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    2845.1  2845.1  4.82  0.029
Residual Error   296  174790.3   590.5
Total            297  177635.3

Unusual Observations
Obs  POPDIFF_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 11       8.01       63.00  31.81   11.06     31.19     1.44 X
130      -1.59        3.00  61.62    2.97    -58.62    -2.43R
154       3.37       37.00  46.20    4.63     -9.20    -0.39 X
159       0.06        6.00  56.49    1.43    -50.49    -2.08R
185       8.02       43.00  31.76   11.08     11.24     0.52 X
189       0.03        6.00  56.59    1.44    -50.59    -2.09R
207       8.01       29.00  31.81   11.06     -2.81    -0.13 X
232       4.70       23.00  42.06    6.45    -19.06    -0.81 X
235       5.21       47.00  40.50    7.15      6.50     0.28 X
288       0.01        6.00  56.66    1.45    -50.66    -2.09R
298       0.32        0.00  55.68    1.41    -55.68    -2.30R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A42. Scatterplot and regression analysis of VIBI score versus difference between 1990 and 2010 population densities for area from 100 to 350 meters of assessment boundary.



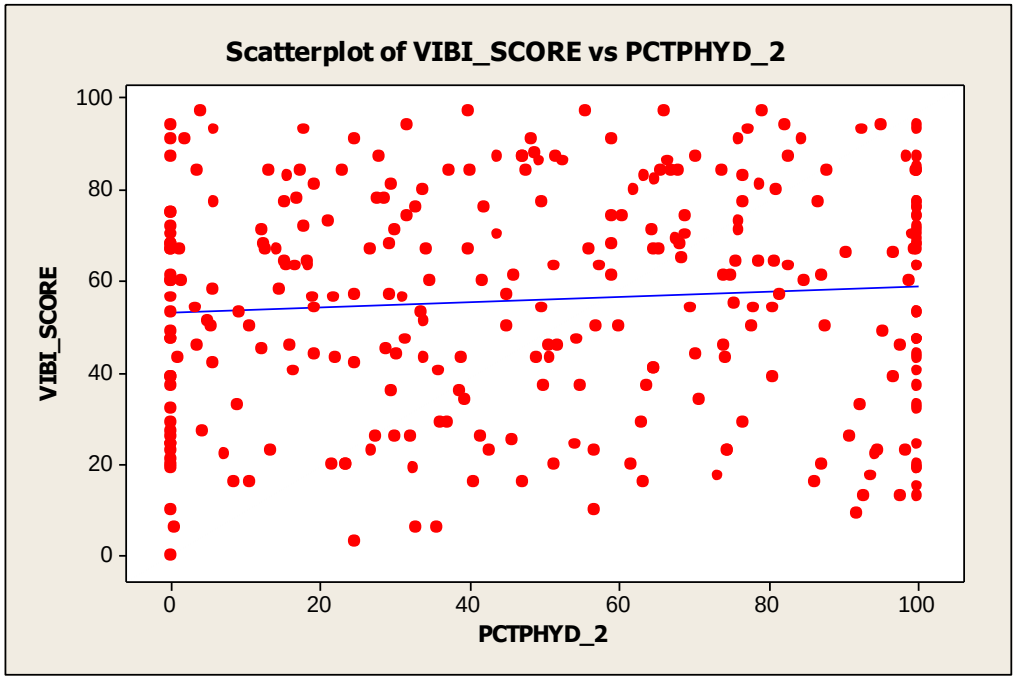

```
The regression equation is
VIBI_SCORE = 56.8 - 3.72 POPDIFF_2

Predictor     Coef  SE Coef      T      P
Constant    56.772    1.462  38.83  0.000
POPDIFF_2   -3.717    1.668  -2.23  0.027

S = 24.2945   R-Sq = 1.6%   R-Sq(adj) = 1.3%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    2929.5  2929.5  4.96  0.027
Residual Error   296  174705.8   590.2
Total            297  177635.3

Unusual Observations
Obs  POPDIFF_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
 11       7.00       63.00  30.74   11.38     32.26     1.50 X
130      -1.14        3.00  61.00    2.69    -58.00    -2.40R
154       3.37       37.00  44.24    5.42     -7.24    -0.31 X
159       0.05        6.00  56.58    1.44    -50.58    -2.09R
185       6.21       43.00  33.70   10.06      9.30     0.42 X
189       0.03        6.00  56.67    1.45    -50.67    -2.09R
207       6.69       29.00  31.90   10.86     -2.90    -0.13 X
232       3.45       23.00  43.95    5.54    -20.95    -0.89 X
235       4.78       47.00  39.00    7.71      8.00     0.35 X
288       0.01        6.00  56.75    1.46    -50.75    -2.09R
298      -0.12        0.00  57.22    1.53    -57.22    -2.36R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A43. Scatterplot and regression analysis of VIBI score versus percent hydric soils for area within 100 meters of assessment boundary.



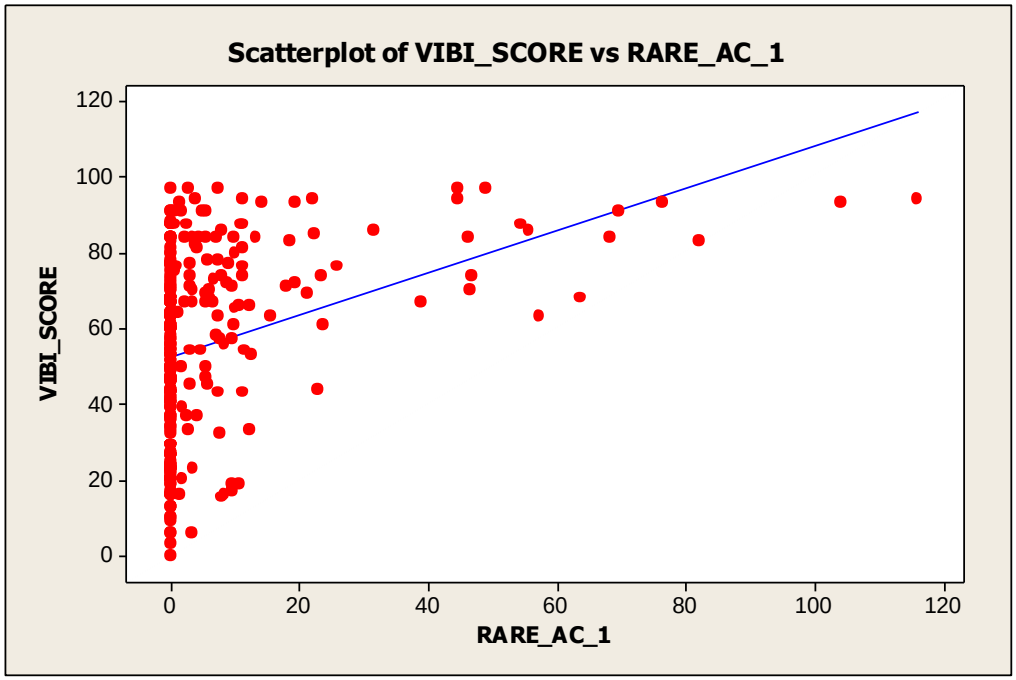

```
The regression equation is
VIBI_SCORE = 54.2 + 0.0259 PCTPHYD_1

Predictor      Coef  SE Coef      T      P
Constant     54.228    2.801  19.36  0.000
PCTPHYD_1   0.02593  0.03771   0.69  0.492

S = 24.4778   R-Sq = 0.2%   R-Sq(adj) = 0.0%

Analysis of Variance
Source            DF        SS     MS     F      P
Regression         1     283.3  283.3  0.47  0.492
Residual Error   296  177352.1  599.2
Total            297  177635.3

Unusual Observations
Obs  PCTPHYD_1  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
130         26        3.00  54.90    2.02    -51.90    -2.13R
159         65        6.00  55.92    1.42    -49.92    -2.04R
189         62        6.00  55.84    1.42    -49.84    -2.04R
298        100        0.00  56.82    1.96    -56.82    -2.33R

R denotes an observation with a large standardized residual.
```

Figure A44. Scatterplot and regression analysis of VIBI score versus percent hydric soils for area from 100 to 350 meters of assessment boundary.



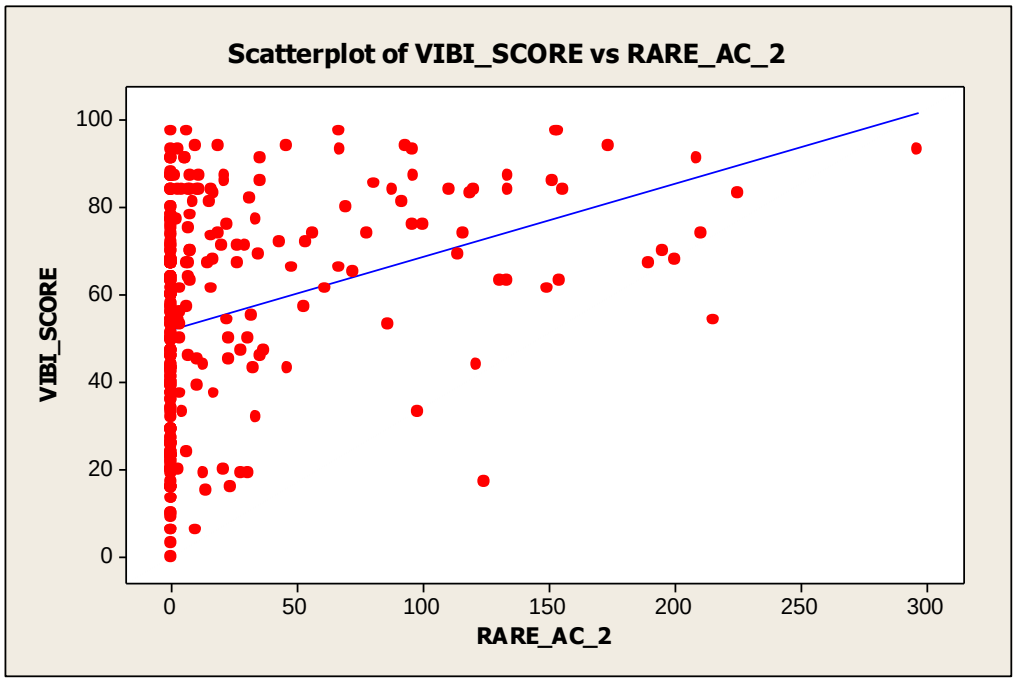

```
The regression equation is
VIBI_SCORE = 53.1 + 0.0559 PCTPHYD_2

Predictor      Coef  SE Coef      T      P
Constant     53.110    2.472  21.49  0.000
PCTPHYD_2   0.05590  0.04076   1.37  0.171

S = 24.4199   R-Sq = 0.6%   R-Sq(adj) = 0.3%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    1121.3  1121.3  1.88  0.171
Residual Error   296  176514.0   596.3
Total            297  177635.3

Unusual Observations
Obs  PCTPHYD_2  VIBI_SCORE    Fit  SE Fit  Residual  St Resid
101         92        9.00  58.23    2.22    -49.23     -2.02R
130         25        3.00  54.49    1.75    -51.49     -2.11R
159         33        6.00  54.94    1.58    -48.94     -2.01R
189         36        6.00  55.10    1.53    -49.10     -2.01R
298          0        0.00  53.11    2.47    -53.11     -2.19R

R denotes an observation with a large standardized residual.
```

Figure A45. Scatterplot and regression analysis of VIBI score versus presence of rare plant species and/or sensitive soil types for area within 100 meters of assessment boundary.



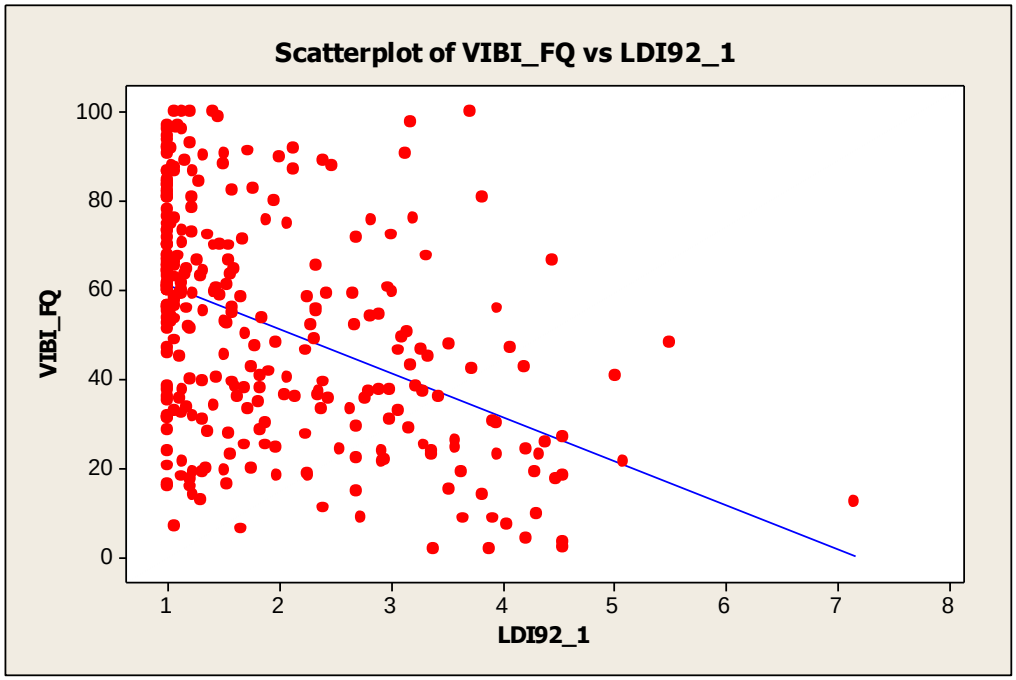

```
The regression equation is
VIBI_SCORE = 52.4 + 0.557 RARE_AC_1

Predictor      Coef  SE Coef      T      P
Constant     52.362    1.429  36.64  0.000
RARE_AC_1   0.55728  0.08456   6.59  0.000

S = 22.8763   R-Sq = 12.8%   R-Sq(adj) = 12.5%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   22731  22731  43.44  0.000
Residual Error   296  154904    523
Total            297  177635

Unusual Observations
Obs  RARE_AC_1  VIBI_SCORE     Fit  SE Fit  Residual  St Resid
 79         45       97.00   77.25    3.50     19.75     0.87 X
 81        116       94.00  117.10    9.38    -23.10    -1.11 X
 90         47       70.00   78.36    3.66     -8.36    -0.37 X
 94         76       93.00   94.90    6.07     -1.90    -0.09 X
 99         64       68.00   87.84    5.03    -19.84    -0.89 X
106         56       86.00   83.40    4.38      2.60     0.12 X
117         70       91.00   91.10    5.50     -0.10    -0.00 X
118        104       93.00  110.40    8.38    -17.40    -0.82 X
130          0        3.00   52.36    1.43    -49.36    -2.16R
139         55       87.00   82.76    4.29      4.24     0.19 X
140         46       84.00   78.19    3.63      5.81     0.26 X
141         68       84.00   90.40    5.40     -6.40    -0.29 X
156         82       83.00   98.16    6.55    -15.16    -0.69 X
159          0        6.00   52.36    1.43    -46.36    -2.03R
160         49       97.00   79.60    3.83     17.40     0.77 X
181         57       63.00   84.32    4.51    -21.32    -0.95 X
188         47       74.00   78.42    3.67     -4.42    -0.20 X
189          3        6.00   54.25    1.35    -48.25    -2.11R
229         45       94.00   77.17    3.49     16.83     0.74 X
288          0        6.00   52.36    1.43    -46.36    -2.03R
298          0        0.00   52.36    1.43    -52.36    -2.29R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A46. Scatterplot and regression analysis of VIBI score versus presence of rare plant species and/or sensitive soil types for area from 100 to 350 meters of assessment boundary.



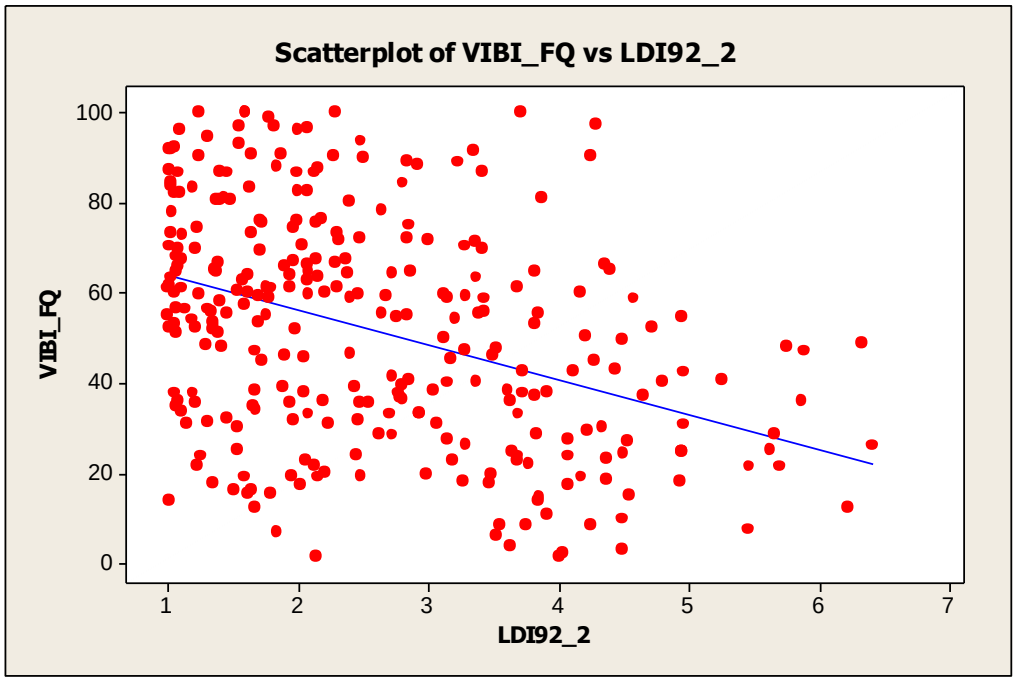

```
The regression equation is
VIBI_SCORE = 51.9 + 0.167 RARE_AC_2

Predictor      Coef  SE Coef      T      P
Constant     51.873    1.488  34.86  0.000
RARE_AC_2   0.16707  0.02721   6.14  0.000

S = 23.0721   R-Sq = 11.3%   R-Sq(adj) = 11.0%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   20068  20068  37.70  0.000
Residual Error   296  157568    532
Total            297  177635

Unusual Observations
Obs  RARE_AC_2  VIBI_SCORE     Fit  SE Fit  Residual  St Resid
 27        149       61.00   76.81    3.66    -15.81     -0.69 X
 79        154       97.00   77.57    3.78     19.43      0.85 X
 90        195       70.00   84.47    4.84    -14.47     -0.64 X
 94        297       93.00  101.48    7.54     -8.48     -0.39 X
 99        200       68.00   85.28    4.97    -17.28     -0.77 X
100        190       67.00   83.55    4.70    -16.55     -0.73 X
117        209       91.00   86.83    5.21      4.17      0.19 X
130          0        3.00   51.87    1.49    -48.87     -2.12R
137        155       63.00   77.71    3.80    -14.71     -0.65 X
142        156       84.00   77.88    3.82      6.12      0.27 X
149        215       54.00   87.84    5.37    -33.84     -1.51 X
160        153       97.00   77.47    3.76     19.53      0.86 X
164        151       86.00   77.17    3.71      8.83      0.39 X
188        210       74.00   87.02    5.24    -13.02     -0.58 X
189         10        6.00   53.54    1.39    -47.54     -2.06R
196        134       84.00   74.25    3.28      9.75      0.43 X
211        135       87.00   74.35    3.29     12.65      0.55 X
229        174       94.00   80.94    4.29     13.06      0.58 X
230        225       83.00   89.47    5.63     -6.47     -0.29 X
270        125       17.00   72.71    3.05    -55.71     -2.44R
298          0        0.00   51.87    1.49    -51.87     -2.25R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A47. Scatterplot and regression analysis of VIBI-FQ score versus 1992 LDI for area within 100 meters of assessment boundary.



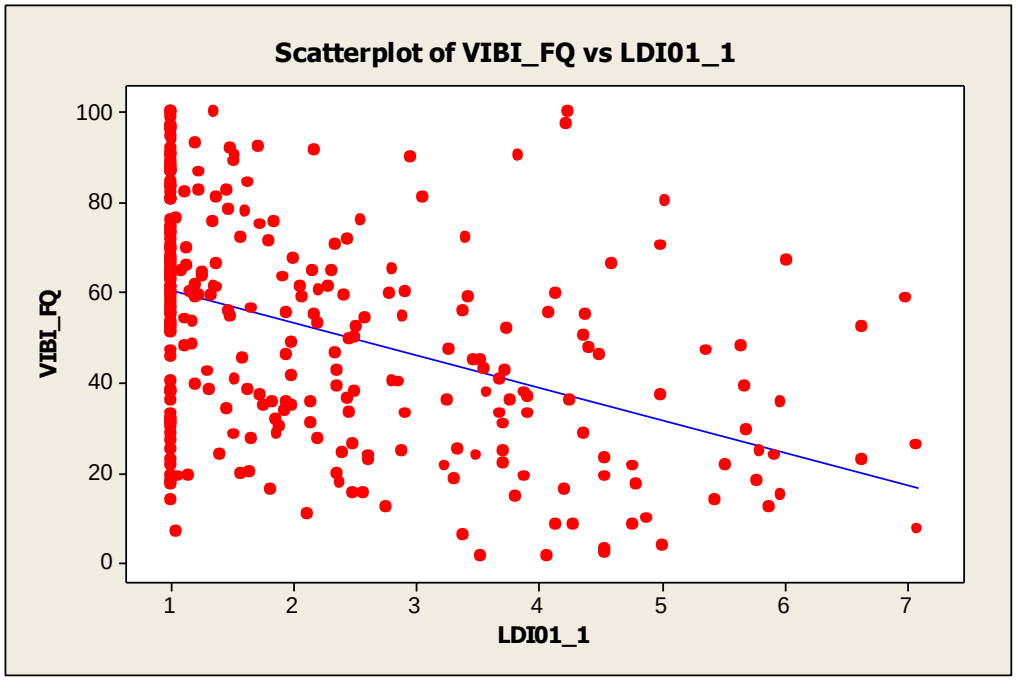

```
The regression equation is
VIBI_FQ = 70.9 - 9.88 LDI92_1

Predictor     Coef  SE Coef      T      P
Constant    70.924    2.644  26.83  0.000
LDI92_1     -9.883    1.187  -8.33  0.000

S = 22.6620   R-Sq = 19.0%   R-Sq(adj) = 18.7%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   35602  35602  69.32  0.000
Residual Error   296  152015    514
Total            297  187618

Unusual Observations
Obs  LDI92_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 47     1.00    15.33  61.04    1.72    -45.71     -2.02R
 53     1.31    12.51  58.00    1.51    -45.49     -2.01R
 56     4.44    66.44  27.00    3.26     39.44      1.76 X
104     3.82    80.93  33.14    2.60     47.79      2.12R
121     3.14    90.45  39.92    1.94     50.53      2.24R
156     3.17    97.53  39.55    1.97     57.97      2.57R
164     3.72   100.00  34.17    2.49     65.83      2.92R
185     5.02    40.78  21.33    3.89     19.45      0.87 X
187     5.08    21.22  20.67    3.97      0.56      0.02 X
189     4.54    18.20  26.05    3.36     -7.85     -0.35 X
224     5.50    48.18  16.61    4.43     31.58      1.42 X
257     4.54     3.14  26.05    3.36    -22.91     -1.02 X
273     4.54     2.04  26.05    3.36    -24.01     -1.07 X
274     4.48    17.23  26.62    3.30     -9.39     -0.42 X
284     4.54    27.03  26.05    3.36      0.97      0.04 X
288     1.07     6.92  60.38    1.67    -53.47     -2.37R
291     7.16    12.19   0.17    6.34     12.02      0.55 X
298     1.67     6.19  54.43    1.35    -48.25     -2.13R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A48. Scatterplot and regression analysis of VIBI-FQ score versus 1992 LDI for area from 100 to 350 meters of assessment boundary.



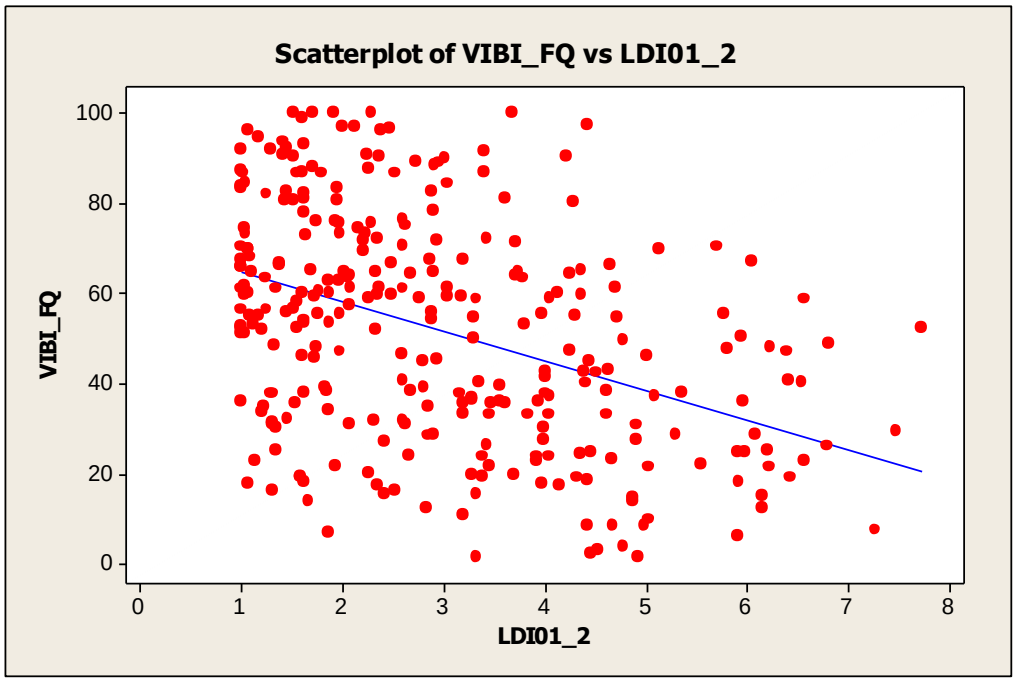

```
The regression equation is
VIBI_FQ = 71.9 - 7.76 LDI92_2

Predictor     Coef  SE Coef      T      P
Constant    71.883    3.018  23.82  0.000
LDI92_2     -7.756    1.045  -7.42  0.000

S = 23.1184   R-Sq = 15.7%   R-Sq(adj) = 15.4%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   29418  29418  55.04  0.000
Residual Error   296  158200    534
Total            297  187618

Unusual Observations
Obs  LDI92_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  3     5.88    35.95  26.31    3.69      9.65     0.42 X
 31     5.66    28.74  28.01    3.48      0.74     0.03 X
 53     1.67    12.51  58.96    1.65    -46.45    -2.01R
 54     2.14     1.61  55.26    1.42    -53.64    -2.32R
121     4.24    90.45  38.97    2.19     51.48     2.24R
143     6.42    25.73  22.12    4.22      3.60     0.16 X
156     4.29    97.53  38.59    2.23     58.94     2.56R
163     1.01    13.83  64.07    2.13    -50.24    -2.18R
164     3.72   100.00  43.07    1.78     56.93     2.47R
187     5.47    21.22  29.46    3.30     -8.24    -0.36 X
224     5.75    48.18  27.30    3.57     20.88     0.91 X
232     5.45     7.25  29.59    3.28    -22.34    -0.98 X
235     6.33    48.96  22.75    4.14     26.21     1.15 X
237     5.70    21.21  27.65    3.52     -6.44    -0.28 X
238     5.63    24.99  28.19    3.46     -3.20    -0.14 X
283     5.89    46.92  26.20    3.70     20.72     0.91 X
288     1.85     6.92  57.54    1.55    -50.62    -2.19R
291     6.22    12.19  23.61    4.03    -11.42    -0.50 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A49. Scatterplot and regression analysis of VIBI-FQ score versus 2001 LDI for area within 100 meters of assessment boundary.



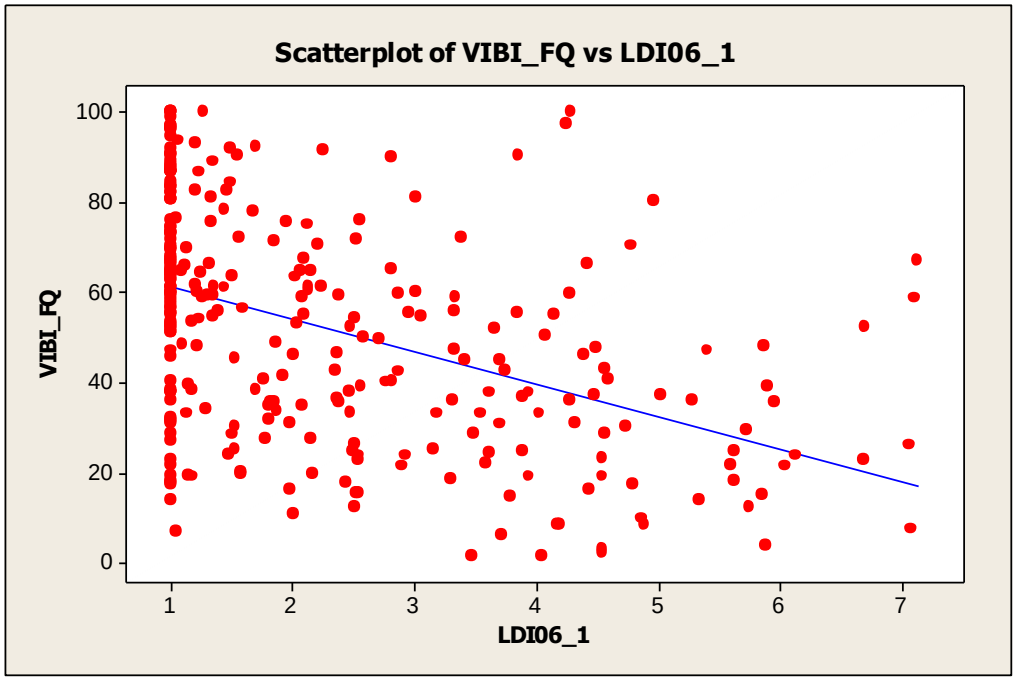

```
The regression equation is
VIBI_FQ = 67.8 - 7.20 LDI01_1

Predictor      Coef  SE Coef      T      P
Constant     67.829    2.339  29.00  0.000
LDI01_1     -7.2042   0.8706  -8.27  0.000

S = 22.6885   R-Sq = 18.8%   R-Sq(adj) = 18.5%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   35247  35247  68.47  0.000
Residual Error   296  152371    515
Total            297  187618

Unusual Observations
Obs  LDI01_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  1     6.99    58.42  17.50    4.35     40.92     1.84 X
 11     6.02    66.90  24.48    3.56     42.42     1.89 X
 25     5.98    15.19  24.76    3.52     -9.57    -0.43 X
 60     5.91    23.51  25.22    3.47     -1.70    -0.08 X
 68     5.69    29.34  26.84    3.29      2.49     0.11 X
 82     5.78    18.18  26.19    3.36     -8.01    -0.36 X
 83     5.80    24.59  26.03    3.38     -1.44    -0.06 X
121     3.84    90.45  40.14    1.93     50.31     2.23R
143     7.07    25.73  16.91    4.42      8.82     0.40 X
153     5.68    39.05  26.89    3.29     12.17     0.54 X
156     4.22    97.53  37.42    2.18     60.10     2.66R
163     1.00    13.83  60.62    1.69    -46.80    -2.07R
164     4.24   100.00  37.31    2.19     62.69     2.78R
177     6.63    52.19  20.05    4.06     32.14     1.44 X
207     6.63    22.87  20.09    4.05      2.78     0.12 X
224     5.65    48.18  27.16    3.26     21.03     0.94 X
227     5.98    35.66  24.75    3.53     10.92     0.49 X
232     7.09     7.25  16.73    4.44     -9.48    -0.43 X
263     5.04    80.16  31.50    2.78     48.66     2.16R
288     1.05     6.92  60.25    1.66    -53.34    -2.36R
291     5.88    12.19  25.46    3.45    -13.27    -0.59 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A50. Scatterplot and regression analysis of VIBI-FQ score versus 2001 LDI for area from 100 to 350 meters of assessment boundary.



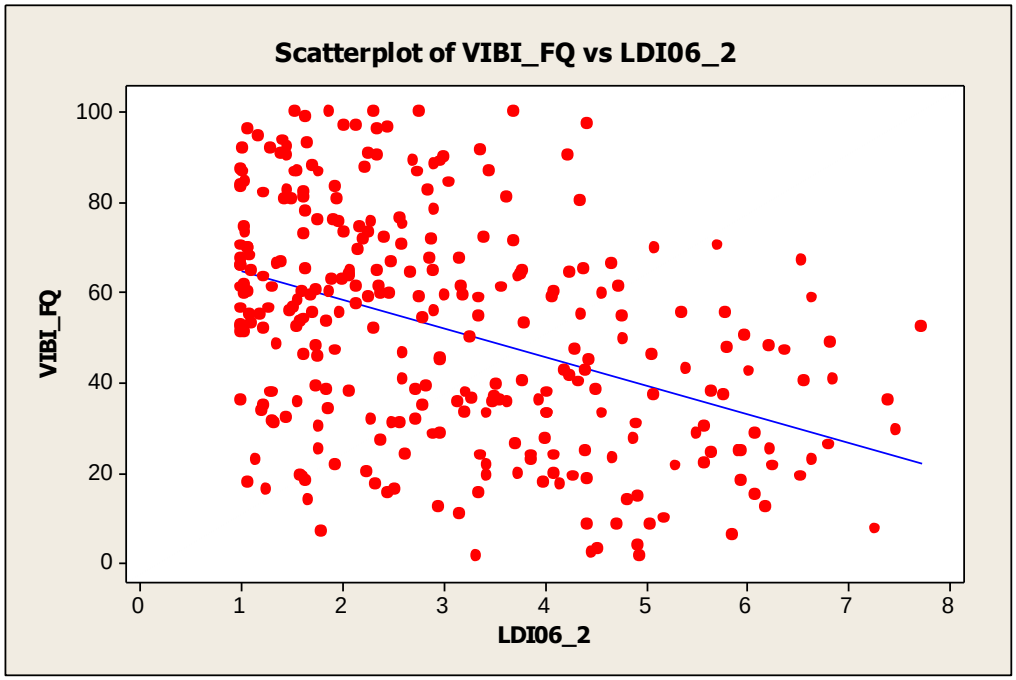

```
The regression equation is
VIBI_FQ = 71.5 - 6.62 LDI01_2

Predictor      Coef  SE Coef      T      P
Constant     71.529    2.807  25.48  0.000
LDI01_2     -6.6220   0.8316  -7.96  0.000

S = 22.8479   R-Sq = 17.6%   R-Sq(adj) = 17.4%

Analysis of Variance
Source            DF      SS      MS      F      P
Regression         1   33098   33098  63.40  0.000
Residual Error   296  154520     522
Total            297  187618

Unusual Observations
Obs  LDI01_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  1     6.57    58.42  28.02    3.27     30.40     1.34 X
 54     3.33     1.61  49.49    1.36    -47.87    -2.10R
 68     7.48    29.34  22.00    3.97      7.34     0.33 X
101     1.31    16.28  62.87    1.92    -46.59    -2.05R
121     4.21    90.45  43.62    1.68     46.83     2.05R
143     6.79    25.73  26.57    3.44     -0.84    -0.04 X
156     4.43    97.53  42.19    1.79     55.33     2.43R
163     1.68    13.83  60.43    1.71    -46.60    -2.05R
164     3.68   100.00  47.19    1.45     52.81     2.32R
177     7.71    52.19  20.46    4.16     31.73     1.41 X
207     6.57    22.87  28.02    3.27     -5.15    -0.23 X
232     7.27     7.25  23.40    3.81    -16.15    -0.72 X
235     6.80    48.96  26.52    3.44     22.44     0.99 X
267     6.55    40.28  28.17    3.25     12.10     0.54 X
288     1.86     6.92  59.20    1.62    -52.29    -2.29R
290     1.08    17.81  64.37    2.06    -46.56    -2.05R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A51. Scatterplot and regression analysis of VIBI-FQ score versus 2006 LDI for area within 100 meters of assessment boundary.



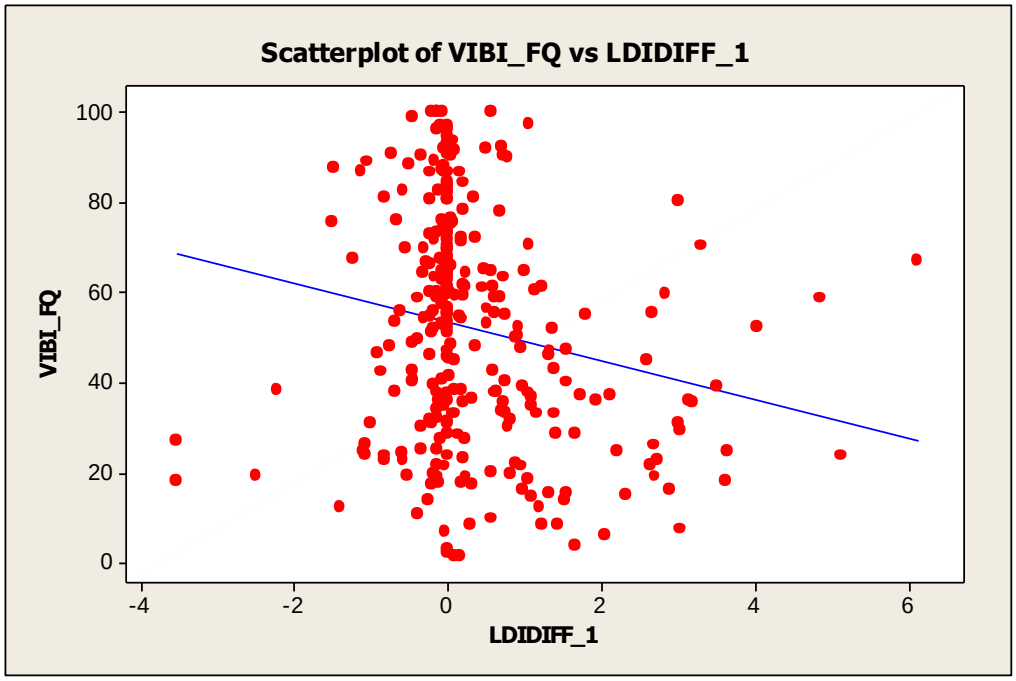

```
The regression equation is
VIBI_FQ = 68.4 - 7.21 LDI06_1

Predictor      Coef  SE Coef      T      P
Constant     68.362    2.310  29.59  0.000
LDI06_1     -7.2149   0.8322  -8.67  0.000

S = 22.4833   R-Sq = 20.2%   R-Sq(adj) = 20.0%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   37990  37990  75.15  0.000
Residual Error   296  149628    505
Total            297  187618

Unusual Observations
Obs  LDI06_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  1     7.09    58.42  17.18    4.20     41.24     1.87 X
 11     7.13    66.90  16.90    4.23     50.00     2.26RX
 25     5.86    15.19  26.10    3.24    -10.91    -0.49 X
 60     6.12    23.51  24.18    3.44     -0.67    -0.03 X
121     3.86    90.45  40.52    1.84     49.92     2.23R
143     7.06    25.73  17.42    4.18      8.31     0.38 X
153     5.89    39.05  25.84    3.27     13.22     0.59 X
156     4.25    97.53  37.69    2.09     59.84     2.67R
163     1.00    13.83  61.15    1.69    -47.32    -2.11R
164     4.29   100.00  37.42    2.11     62.58     2.80R
177     6.70    52.19  20.05    3.89     32.14     1.45 X
187     6.05    21.22  24.75    3.38     -3.52    -0.16 X
190     5.88     3.85  25.96    3.25    -22.11    -0.99 X
207     6.68    22.87  20.14    3.88      2.73     0.12 X
224     5.86    48.18  26.06    3.24     22.13     0.99 X
227     5.96    35.66  25.39    3.32     10.27     0.46 X
232     7.07     7.25  17.39    4.18    -10.14    -0.46 X
263     4.96    80.16  32.59    2.57     47.57     2.13R
288     1.05     6.92  60.78    1.66    -53.87    -2.40R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A52. Scatterplot and regression analysis of VIBI-FQ score versus 2006 LDI for area from 100 to 350 meters of assessment boundary.



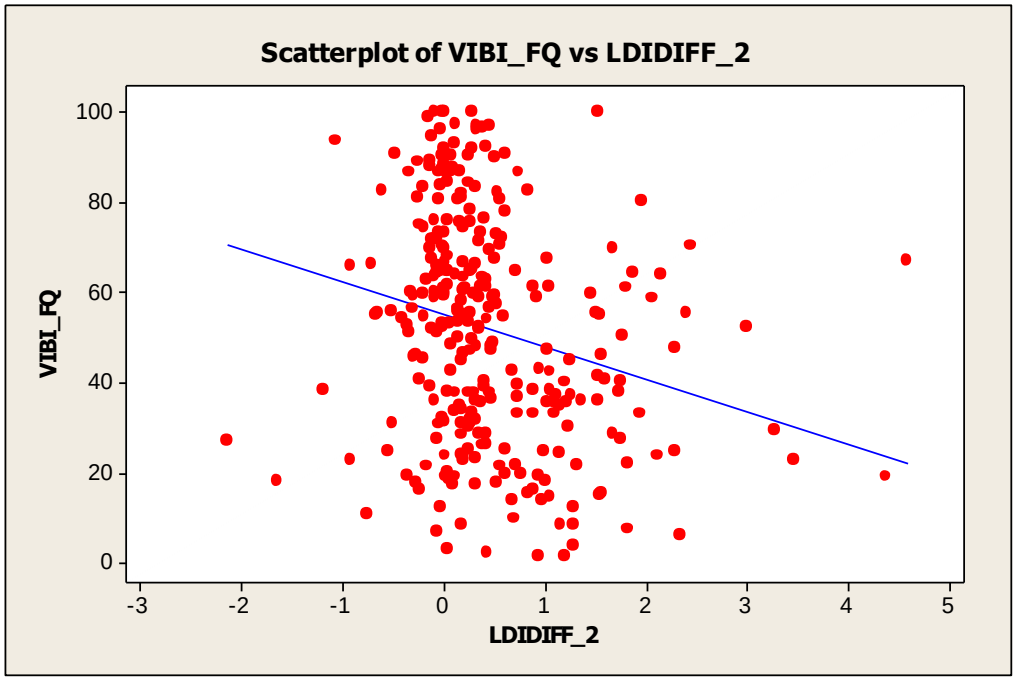

```
The regression equation is
VIBI_FQ = 71.3 - 6.40 LDI06_2

Predictor      Coef  SE Coef      T      P
Constant     71.295    2.776  25.68  0.000
LDI06_2     -6.4033   0.8024  -7.98  0.000

S = 22.8388   R-Sq = 17.7%   R-Sq(adj) = 17.4%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   33221  33221  63.69  0.000
Residual Error   296  154397    522
Total            297  187618

Unusual Observations
Obs  LDI06_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  3     7.40    35.95  23.94    3.74     12.02     0.53 X
 54     3.34     1.61  49.89    1.34    -48.27    -2.12R
 68     7.48    29.34  23.37    3.80      5.97     0.27 X
 81     2.77   100.00  53.54    1.34     46.46     2.04R
101     1.26    16.28  63.20    1.94    -46.91    -2.06R
121     4.24    90.45  44.16    1.63     46.29     2.03R
143     6.80    25.73  27.73    3.30     -2.00    -0.09 X
156     4.43    97.53  42.93    1.73     54.59     2.40R
163     1.69    13.83  60.50    1.71    -46.68    -2.05R
164     3.71   100.00  47.57    1.43     52.43     2.30R
177     7.72    52.19  21.86    3.98     30.33     1.35 X
185     6.86    40.78  27.40    3.33     13.38     0.59 X
232     7.28     7.25  24.69    3.65    -17.44    -0.77 X
235     6.83    48.96  27.57    3.31     21.39     0.95 X
288     1.79     6.92  59.80    1.66    -52.89    -2.32R
290     1.08    17.81  64.38    2.06    -46.57    -2.05R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A53. Scatterplot and regression analysis of VIBI-FQ score versus difference between 2006 and 1992 LDI for area within 100 meters of assessment boundary.



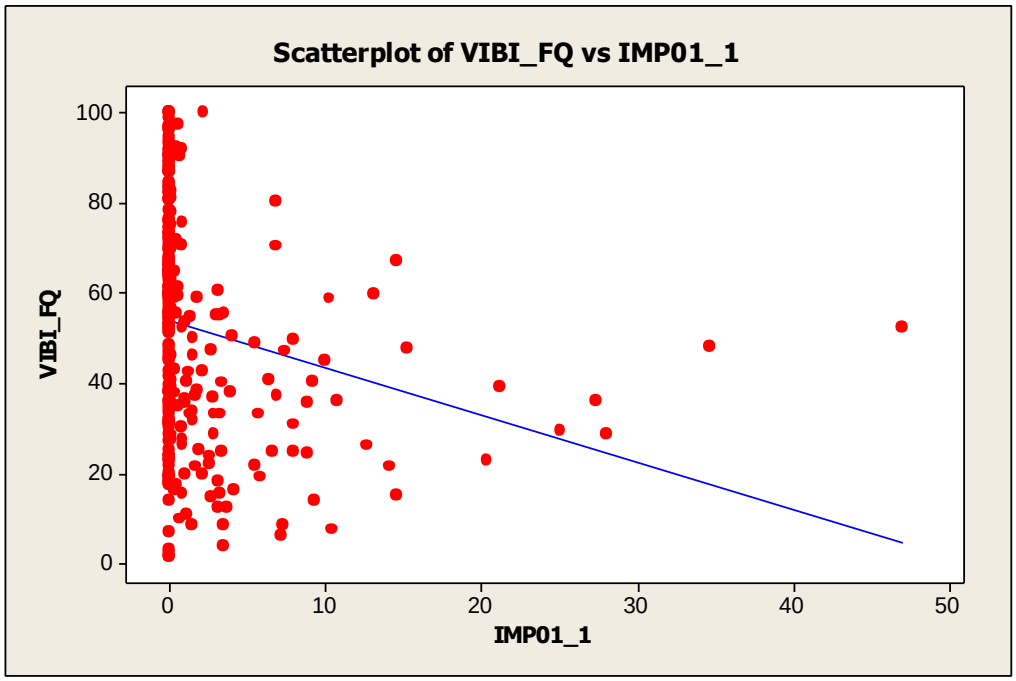

```
The regression equation is
VIBI_FQ = 53.4 - 4.28 LDIDIFF_1

Predictor     Coef  SE Coef      T      P
Constant    53.360    1.500  35.58  0.000
LDIDIFF_1   -4.282    1.253  -3.42  0.001

S = 24.6938   R-Sq = 3.8%   R-Sq(adj) = 3.5%

Analysis of Variance
Source            DF        SS      MS      F      P
Regression         1    7122.3  7122.3  11.68  0.001
Residual Error   296  180495.6   609.8
Total            297  187617.9

Unusual Observations
Obs  LDIDIFF_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  1       4.84    58.42  32.64    5.79     25.78     1.07 X
  3       3.13    35.95  39.96    3.75     -4.01    -0.16 X
 11       6.13    66.90  27.10    7.37     39.80     1.69 X
 33       3.00    30.85  40.52    3.60     -9.67    -0.40 X
 36       0.16     1.54  52.69    1.45    -51.15    -2.08R
 54       0.09     1.61  52.99    1.47    -51.38    -2.08R
 60       5.12    23.51  31.42    6.14     -7.91    -0.33 X
 68       3.03    29.34  40.40    3.63    -11.07    -0.45 X
 82       3.62    18.18  37.86    4.33    -19.68    -0.81 X
 83       3.64    24.59  37.78    4.35    -13.19    -0.54 X
107      -2.49    19.15  64.03    3.85    -44.87    -1.84 X
153       3.50    39.05  38.38    4.19      0.68     0.03 X
177       4.02    52.19  36.16    4.80     16.03     0.66 X
189      -3.54    18.20  68.52    5.09    -50.31    -2.08RX
201       3.30    70.03  39.21    3.96     30.82     1.26 X
227       3.18    35.66  39.75    3.81     -4.08    -0.17 X
232       3.03     7.25  40.40    3.63    -33.15    -1.36 X
254      -2.22    38.46  62.87    3.54    -24.41    -1.00 X
257       0.00     3.14  53.36    1.50    -50.22    -2.04R
263       3.00    80.16  40.52    3.60     39.64     1.62 X
273       0.00     2.04  53.36    1.50    -51.32    -2.08R
284      -3.54    27.03  68.52    5.09    -41.49    -1.72 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A54. Scatterplot and regression analysis of VIBI-FQ score versus difference between 2006 and 1992 LDI for area from 100 to 350 meters of assessment boundary.



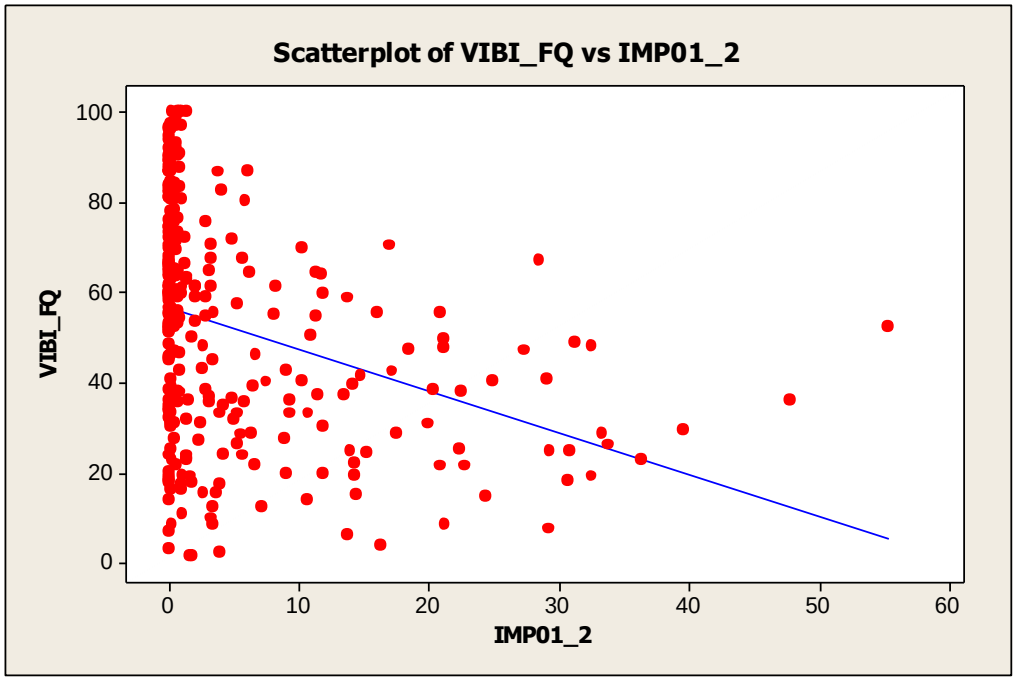

```
The regression equation is
VIBI_FQ = 55.1 - 7.23 LDIDIFF_2

Predictor     Coef  SE Coef      T      P
Constant    55.104    1.629  33.82  0.000
LDIDIFF_2   -7.227    1.763  -4.10  0.000

S = 24.4904   R-Sq = 5.4%   R-Sq(adj) = 5.1%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   10083  10083  16.81  0.000
Residual Error   296  177535    600
Total            297  187618

Unusual Observations
Obs  LDIDIFF_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 11       4.58    66.90  22.01    7.41     44.89     1.92 X
 68       3.27    29.34  31.49    5.16     -2.15    -0.09 X
 81       1.53   100.00  44.02    2.37     55.98     2.30R
 84      -0.75    10.68  60.55    2.56    -49.87    -2.05R
133       4.38    19.11  23.46    7.06     -4.35    -0.19 X
177       3.00    52.19  33.41    4.71     18.78     0.78 X
189      -1.63    18.20  66.88    3.94    -48.67    -2.01RX
200       2.40    55.54  37.75    3.71     17.78     0.73 X
201       2.43    70.03  37.52    3.76     32.51     1.34 X
207       3.46    22.87  30.13    5.48     -7.26    -0.30 X
216       2.29    47.82  38.58    3.53      9.25     0.38 X
257       0.04     3.14  54.84    1.60    -51.70    -2.12R
273       0.43     2.04  51.98    1.42    -49.94    -2.04R
284      -2.14    27.03  70.57    4.79    -43.54    -1.81 X
297       2.28    24.70  38.59    3.52    -13.89    -0.57 X
298       2.34     6.19  38.17    3.62    -31.98    -1.32 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A55. Scatterplot and regression analysis of VIBI-FQ score versus 2001 percent impervious surface for area within 100 meters of assessment boundary.



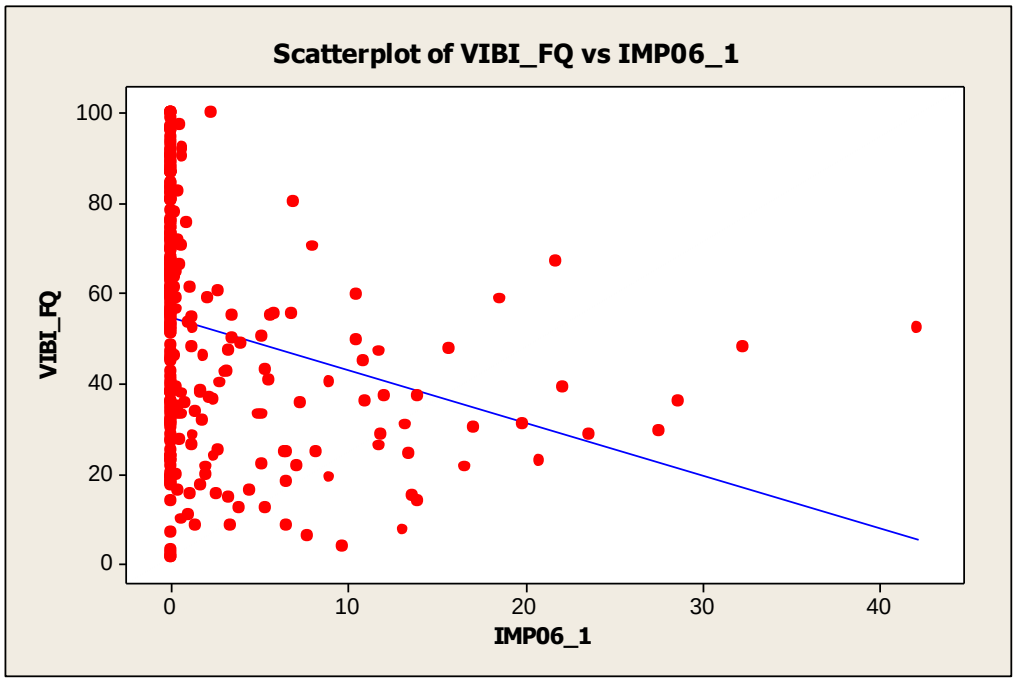

```
The regression equation is
VIBI_FQ = 53.9 - 1.05 IMP01_1

Predictor      Coef  SE Coef      T      P
Constant     53.916    1.521  35.45  0.000
IMP01_1     -1.0549   0.2707  -3.90  0.000

S = 24.5541   R-Sq = 4.9%   R-Sq(adj) = 4.6%

Analysis of Variance
Source            DF        SS      MS      F      P
Regression         1    9157.8  9157.8  15.19  0.000
Residual Error   296  178460.1   602.9
Total            297  187617.9

Unusual Observations
Obs  IMP01_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  3     27.4    35.95  25.01    7.03     10.95      0.47 X
 11     14.6    66.90  38.56    3.69     28.33      1.17 X
 25     14.5    15.19  38.58    3.68    -23.39     -0.96 X
 31     28.1    28.74  24.31    7.20      4.43      0.19 X
 36      0.0     1.54  53.92    1.52    -52.38     -2.14R
 54      0.0     1.61  53.92    1.52    -52.30     -2.13R
 68     25.2    29.34  27.38    6.43      1.96      0.08 X
153     21.3    39.05  31.50    5.40      7.55      0.32 X
177     47.0    52.19   4.38   12.26     47.81      2.25RX
187     14.1    21.22  39.06    3.57    -17.84     -0.73 X
207     20.5    22.87  32.33    5.20     -9.46     -0.39 X
216     15.2    47.82  37.86    3.85      9.96      0.41 X
224     34.7    48.18  17.34    8.96     30.84      1.35 X
257      0.0     3.14  53.92    1.52    -50.77     -2.07R
273      0.0     2.04  53.92    1.52    -51.88     -2.12R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A56. Scatterplot and regression analysis of VIBI-FQ score versus 2001 percent impervious surface for area from 100 to 350 meters of assessment boundary.



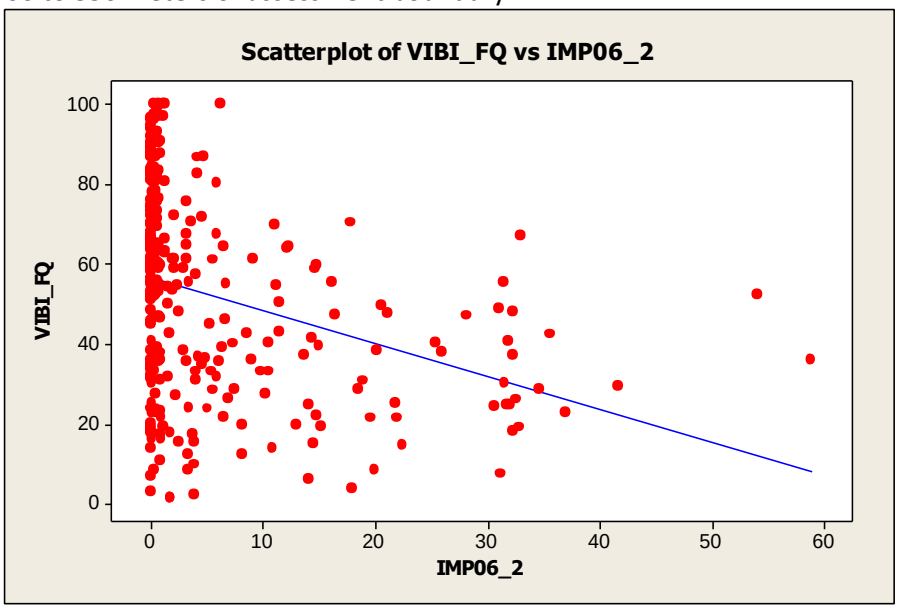

```
The regression equation is
VIBI_FQ = 56.6 - 0.926 IMP01_2

Predictor      Coef  SE Coef      T      P
Constant     56.595    1.583  35.76  0.000
IMP01_2     -0.9260   0.1520  -6.09  0.000

S = 23.7322   R-Sq = 11.1%   R-Sq(adj) = 10.8%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   20906  20906  37.12  0.000
Residual Error   296  166712    563
Total            297  187618

Unusual Observations
Obs  IMP01_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  3     47.8    35.95  12.33    6.63     23.62      1.04 X
 11     28.6    66.90  30.10    3.82     36.79      1.57 X
 31     33.4    28.74  25.66    4.51      3.09      0.13 X
 36      1.9     1.54  54.82    1.46    -53.28     -2.25R
 54      1.7     1.61  55.04    1.47    -53.42     -2.26R
 67     29.3    24.60  29.44    3.92     -4.84     -0.21 X
 68     39.6    29.34  19.96    5.41      9.37      0.41 X
 82     30.8    18.18  28.12    4.13     -9.94     -0.43 X
 83     30.8    24.59  28.09    4.13     -3.50     -0.15 X
133     32.6    19.11  26.38    4.40     -7.27     -0.31 X
143     33.8    25.73  25.34    4.56      0.39      0.02 X
159      0.4     8.25  56.26    1.56    -48.01     -2.03R
177     55.3    52.19   5.36    7.75     46.83      2.09RX
185     29.2    40.78  29.59    3.90     11.19      0.48 X
207     36.4    22.87  22.93    4.94     -0.06     -0.00 X
224     32.5    48.18  26.47    4.38     21.71      0.93 X
232     29.2     7.25  29.56    3.90    -22.31     -0.95 X
235     31.2    48.96  27.70    4.19     21.26      0.91 X
257      0.0     3.14  56.59    1.58    -53.45     -2.26R
273      3.9     2.04  53.00    1.39    -50.96     -2.15R
283     27.3    46.92  31.32    3.63     15.59      0.66 X
288      0.0     6.92  56.59    1.58    -49.67     -2.10R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A57. Scatterplot and regression analysis of VIBI-FQ score versus 2006 percent impervious surface for area within 100 meters of assessment boundary.



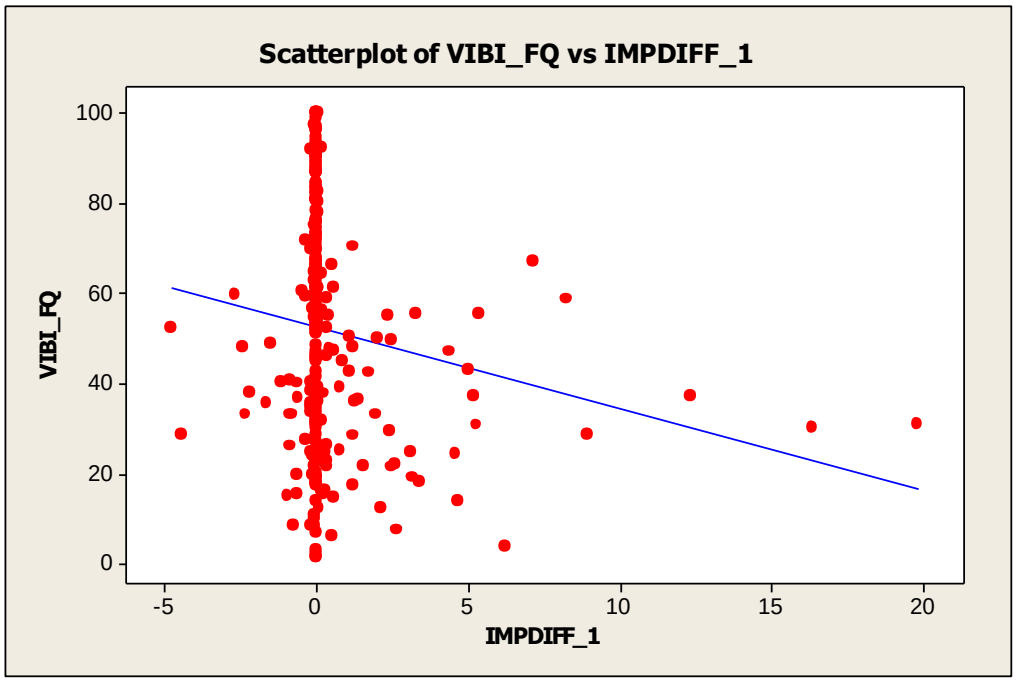

```
The regression equation is
VIBI_FQ = 54.7 - 1.17 IMP06_1

Predictor      Coef  SE Coef      T      P
Constant     54.682    1.533  35.66  0.000
IMP06_1     -1.1681   0.2486  -4.70  0.000

S = 24.2869   R-Sq = 6.9%   R-Sq(adj) = 6.6%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   13021  13021  22.07  0.000
Residual Error   296  174597    590
Total            297  187618

Unusual Observations
Obs   IMP06_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  1      18.6    58.42  32.95    4.26     25.47      1.07 X
  3      28.7    35.95  21.20    6.67     14.75      0.63 X
 11      21.7    66.90  29.32    4.99     37.57      1.58 X
 31      23.6    28.74  27.10    5.45      1.64      0.07 X
 33      19.8    30.85  31.51    4.55     -0.66     -0.03 X
 36       0.0     1.54  54.68    1.53    -53.14     -2.19R
 54       0.0     1.61  54.68    1.53    -53.07     -2.19R
 68      27.6    29.34  22.47    6.40      6.87      0.29 X
153      22.1    39.05  28.88    5.08     10.17      0.43 X
177      42.2    52.19   5.42    9.98     46.77      2.11RX
187      16.6    21.22  35.29    3.79    -14.07     -0.59 X
207      20.8    22.87  30.39    4.77     -7.52     -0.32 X
216      15.7    47.82  36.35    3.58     11.47      0.48 X
222      17.1    30.04  34.67    3.91     -4.64     -0.19 X
224      32.3    48.18  17.01    7.54     31.17      1.35 X
257       0.0     3.14  54.68    1.53    -51.54     -2.13R
273       0.0     2.04  54.68    1.53    -52.64     -2.17R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A58. Scatterplot and regression analysis of VIBI-FQ score versus 2006 percent impervious surface for area from 100 to 350 meters of assessment boundary.



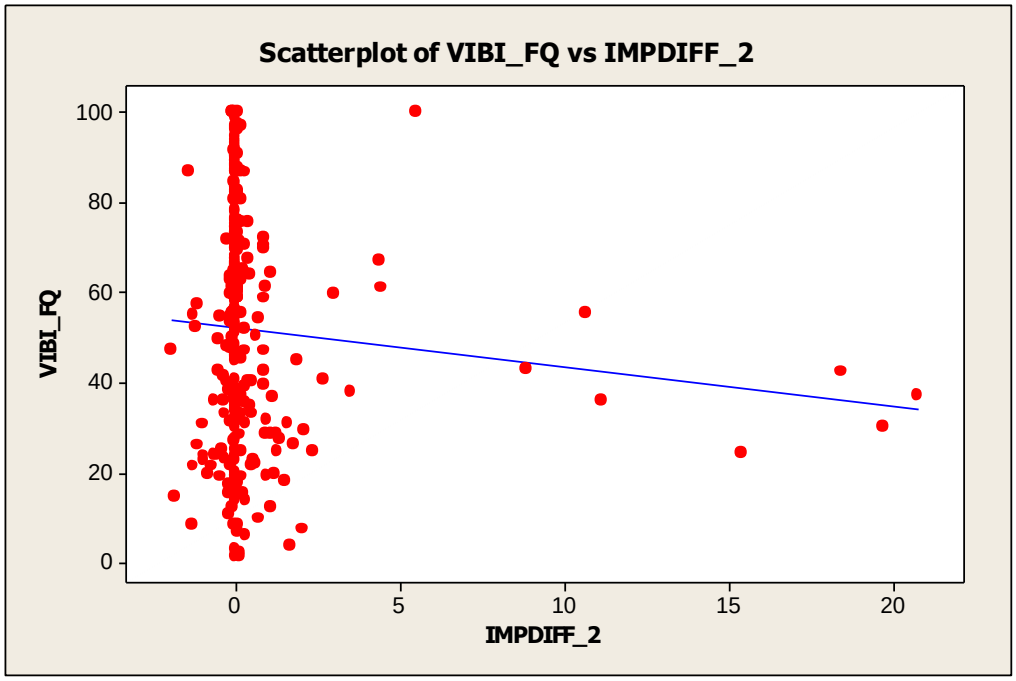

```
The regression equation is
VIBI_FQ = 56.5 - 0.822 IMP06_2

Predictor      Coef  SE Coef      T      P
Constant     56.456    1.586  35.60  0.000
IMP06_2     -0.8217   0.1388  -5.92  0.000

S = 23.8065   R-Sq = 10.6%   R-Sq(adj) = 10.3%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   19860  19860  35.04  0.000
Residual Error   296  167758    567
Total            297  187618

Unusual Observations
Obs  IMP06_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  3     58.9    35.95   8.06    7.52     27.89     1.23 X
 11     32.9    66.90  29.38    4.03     37.51     1.60 X
 31     34.6    28.74  28.02    4.25      0.72     0.03 X
 36      1.9     1.54  54.90    1.47    -53.36    -2.25R
 54      1.8     1.61  55.00    1.48    -53.39    -2.25R
 67     31.7    24.60  30.44    3.87     -5.84    -0.25 X
 68     41.6    29.34  22.25    5.18      7.09     0.30 X
 81      6.2   100.00  51.33    1.38     48.67     2.05R
 82     32.2    18.18  29.96    3.94    -11.78    -0.50 X
 83     32.1    24.59  30.11    3.92     -5.52    -0.24 X
 97     31.5    55.47  30.58    3.84     24.90     1.06 X
133     32.8    19.11  29.54    4.01    -10.42    -0.44 X
143     32.6    25.73  29.70    3.98     -3.97    -0.17 X
148     32.2    37.20  29.96    3.94      7.25     0.31 X
159      0.4     8.25  56.14    1.56    -47.89    -2.02R
177     54.1    52.19  12.03    6.86     40.16     1.76 X
185     31.8    40.78  30.32    3.88     10.45     0.45 X
207     36.9    22.87  26.14    4.55     -3.27    -0.14 X
221     30.6    24.19  31.27    3.73     -7.09    -0.30 X
222     31.6    30.04  30.50    3.86     -0.46    -0.02 X
223     35.6    42.35  27.22    4.38     15.13     0.65 X
224     32.2    48.18  29.97    3.94     18.21     0.78 X
232     31.2     7.25  30.82    3.81    -23.57    -1.00 X
235     31.1    48.96  30.93    3.79     18.03     0.77 X
257      0.0     3.14  56.46    1.59    -53.31    -2.24R
273      4.0     2.04  53.21    1.40    -51.17    -2.15R
283     28.1    46.92  33.35    3.41     13.57     0.58 X
288      0.1     6.92  56.40    1.58    -49.49    -2.08R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A59. Scatterplot and regression analysis of VIBI-FQ score versus difference between 2006 and 2001 percent impervious surface for area within 100 meters of assessment boundary.



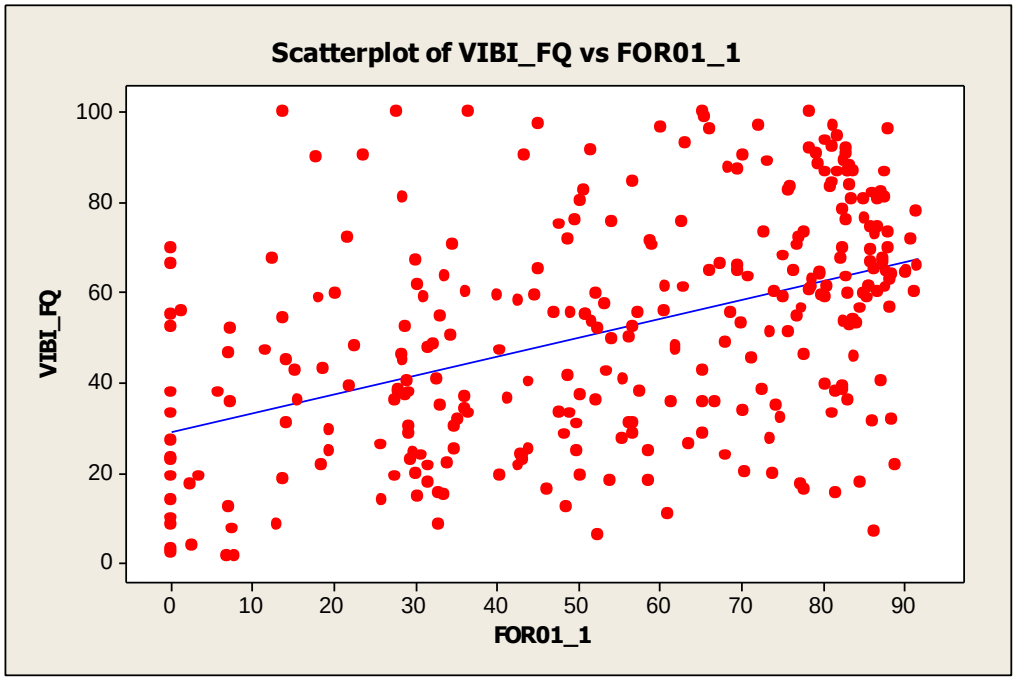

```
The regression equation is
VIBI_FQ = 52.7 - 1.82 IMPDIFF_1

Predictor      Coef  SE Coef      T      P
Constant     52.664    1.475  35.72  0.000
IMPDIFF_1   -1.8247   0.6765  -2.70  0.007

S = 24.8725   R-Sq = 2.4%   R-Sq(adj) = 2.1%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    4500.2  4500.2  7.27  0.007
Residual Error   296  183117.7   618.6
Total            297  187617.9

Unusual Observations
Obs  IMPDIFF_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  1        8.3    58.42  37.60    5.47     20.82      0.86 X
 11        7.2    66.90  39.61    4.75     27.29      1.12 X
 31       -4.4    28.74  60.78    3.62    -32.04     -1.30 X
 33       19.8    30.85  16.47   13.19     14.38      0.68 X
 36        0.0     1.54  52.66    1.47    -51.12     -2.06R
 54        0.0     1.61  52.66    1.47    -51.05     -2.06R
 57        8.9    28.48  36.36    5.91     -7.88     -0.33 X
 97        5.4    55.47  42.84    3.63     12.63      0.51 X
148       12.3    37.20  30.16    8.16      7.04      0.30 X
177       -4.8    52.19  61.40    3.83     -9.21     -0.37 X
190        6.2     3.85  41.34    4.14    -37.49     -1.53 X
222       16.3    30.04  22.83   10.84      7.20      0.32 X
236        5.3    30.41  43.02    3.57    -12.60     -0.51 X
273        0.0     2.04  52.66    1.47    -50.63     -2.04R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A60. Scatterplot and regression analysis of VIBI-FQ score versus difference between 2006 and 2001 percent impervious surface for area from 100 to 350 meters of assessment boundary.



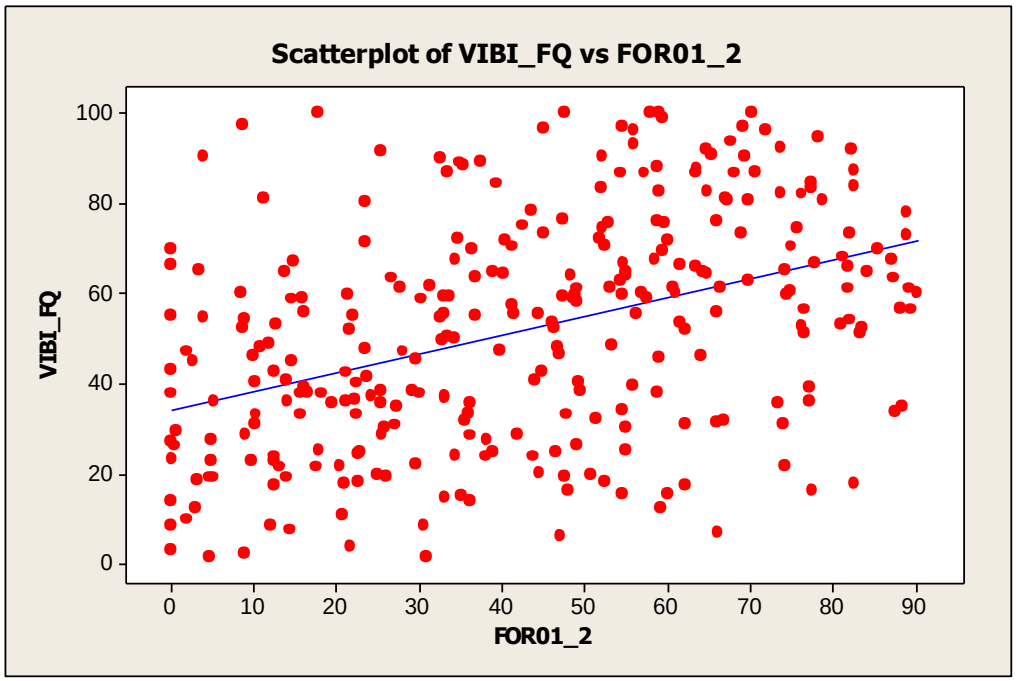

```
The regression equation is
VIBI_FQ = 52.2 - 0.879 IMPDIFF_2

Predictor      Coef  SE Coef      T      P
Constant     52.245    1.481  35.28  0.000
IMPDIFF_2   -0.8788   0.5894  -1.49  0.137

S = 25.0823   R-Sq = 0.7%   R-Sq(adj) = 0.4%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    1398.4  1398.4  2.22  0.137
Residual Error   296  186219.5   629.1
Total            297  187617.9

Unusual Observations
Obs  IMPDIFF_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  3       11.1    35.95  42.50    6.42     -6.54    -0.27 X
 36       -0.0     1.54  52.27    1.48    -50.73    -2.03R
 54        0.1     1.61  52.17    1.47    -50.55    -2.02R
 81        5.5   100.00  47.45    3.27     52.55     2.11R
 97       10.6    55.47  42.92    6.14     12.55     0.52 X
148       20.8    37.20  34.01   12.04      3.20     0.15 X
154        8.8    43.05  44.48    5.13     -1.43    -0.06 X
221       15.4    24.19  38.73    8.90    -14.55    -0.62 X
222       19.7    30.04  34.94   11.41     -4.90    -0.22 X
223       18.4    42.35  36.10   10.64      6.25     0.28 X
273        0.1     2.04  52.18    1.47    -50.14    -2.00R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A61. Scatterplot and regression analysis of VIBI-FQ score versus 2001 percent forest canopy for area within 100 meters of assessment boundary.



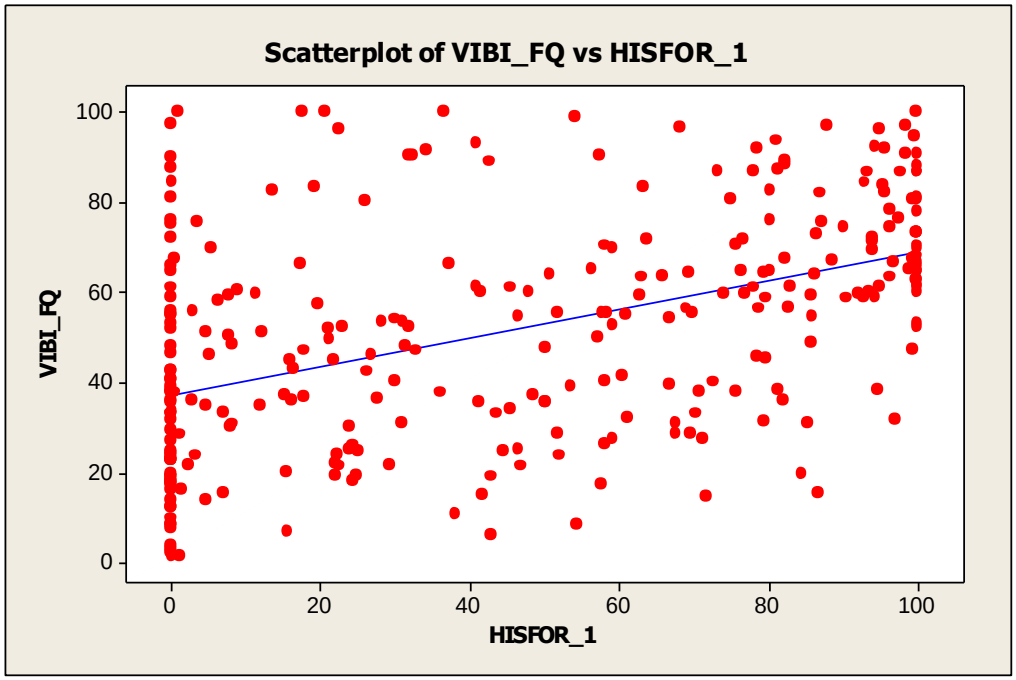

```
The regression equation is
VIBI_FQ = 29.0 + 0.419 FOR01_1

Predictor      Coef  SE Coef      T      P
Constant     29.007    2.877  10.08  0.000
FOR01_1     0.41877  0.04715   8.88  0.000

S = 22.3716   R-Sq = 21.0%   R-Sq(adj) = 20.8%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   39473  39473  78.87  0.000
Residual Error   296  148145    500
Total            297  187618

Unusual Observations
Obs  FOR01_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 19     89.0    21.53  66.26    2.08    -44.73    -2.01R
 47     81.5    15.33  63.14    1.82    -47.81    -2.14R
 94     27.7   100.00  40.61    1.81     59.39     2.66R
101     77.7    16.28  61.56    1.70    -45.27    -2.03R
121     23.7    90.45  38.93    1.95     51.52     2.31R
141     17.8    89.95  36.46    2.16     53.49     2.40R
156     45.0    97.53  47.87    1.37     49.66     2.22R
164     13.7   100.00  34.75    2.32     65.25     2.93R
180     36.6   100.00  44.31    1.55     55.69     2.50R
288     86.3     6.92  65.16    1.98    -58.25    -2.61R
290     84.6    17.81  64.43    1.92    -46.62    -2.09R
298     52.5     6.19  50.99    1.30    -44.81    -2.01R

R denotes an observation with a large standardized residual.
```

Figure A62. Scatterplot and regression analysis of VIBI-FQ score versus 2001 percent forest canopy for area from 100 to 350 meters of assessment boundary.



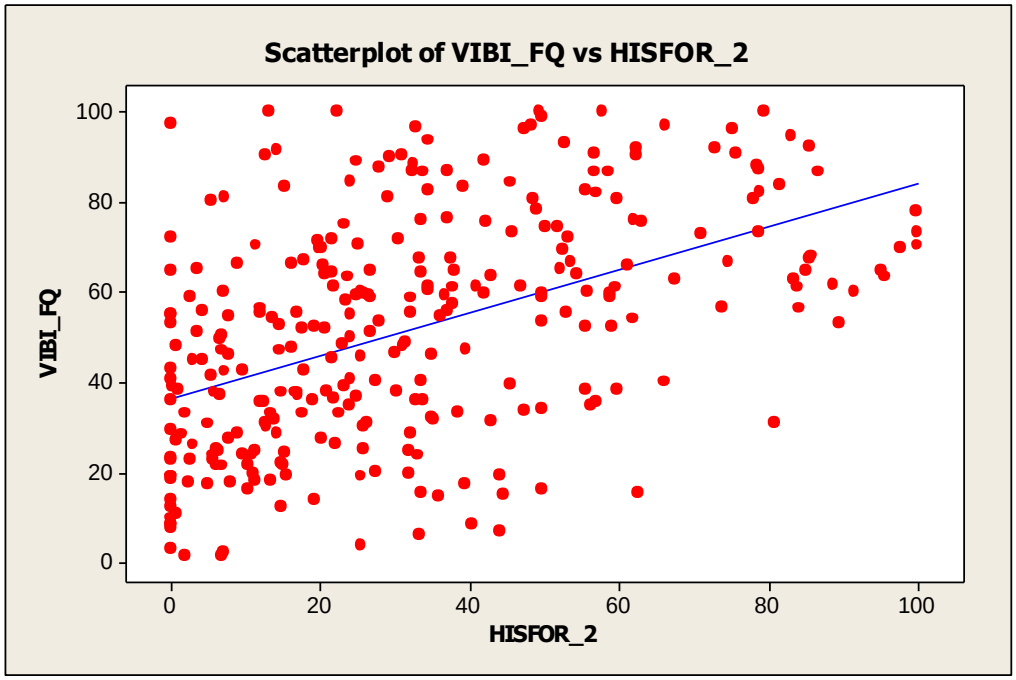

```
The regression equation is
VIBI_FQ = 33.9 + 0.417 FOR01_2

Predictor      Coef  SE Coef      T      P
Constant     33.925    2.622  12.94  0.000
FOR01_2     0.41723  0.05276   7.91  0.000

S = 22.8754   R-Sq = 17.4%   R-Sq(adj) = 17.2%

Analysis of Variance
Source            DF      SS      MS      F      P
Regression         1   32726   32726  62.54  0.000
Residual Error   296  154892     523
Total            297  187618

Unusual Observations
Obs  FOR01_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 38     25.5    91.63  44.57    1.61     47.05     2.06R
 53     59.3    12.51  58.66    1.58    -46.15    -2.02R
101     77.6    16.28  66.30    2.26    -50.02    -2.20R
121      4.0    90.45  35.60    2.44     54.84     2.41R
156      8.8    97.53  37.58    2.24     59.94     2.63R
164     17.7   100.00  41.33    1.88     58.67     2.57R
180     47.6   100.00  53.78    1.35     46.22     2.02R
288     66.1     6.92  61.52    1.81    -54.60    -2.39R
290     82.6    17.81  68.40    2.48    -50.59    -2.22R
298     47.3     6.19  53.65    1.35    -47.47    -2.08R

R denotes an observation with a large standardized residual.
```

Figure A63. Scatterplot and regression analysis of VIBI-FQ score versus percent historic forest for area within 100 meters of assessment boundary.



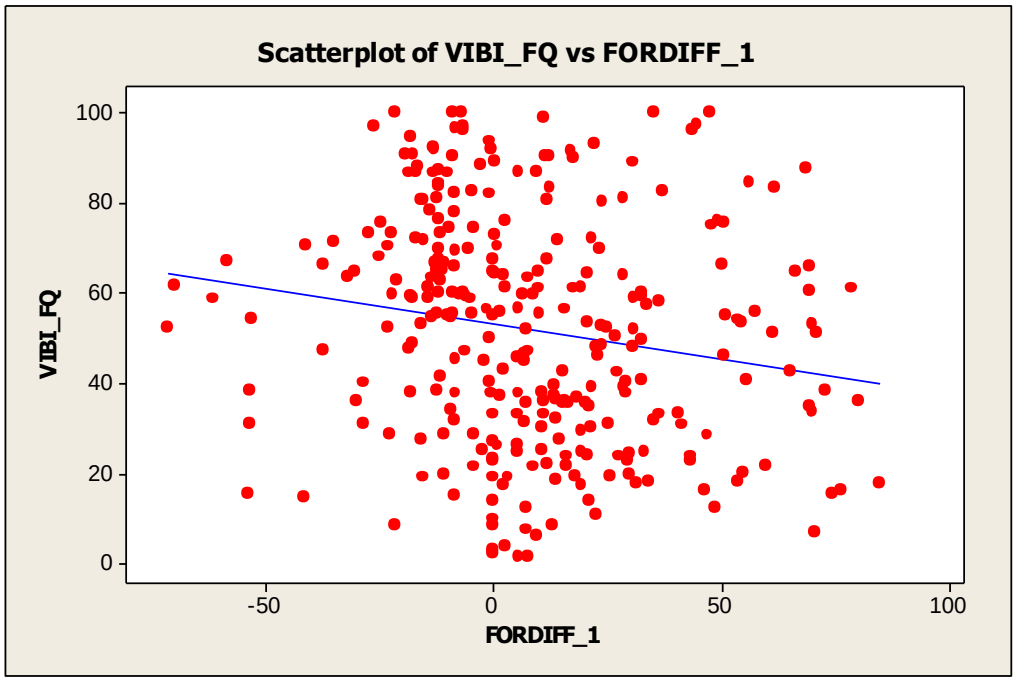

```
The regression equation is
VIBI_FQ = 37.3 + 0.316 HISFOR_1

Predictor      Coef  SE Coef      T      P
Constant     37.306    2.038  18.31  0.000
HISFOR_1    0.31608  0.03441   9.19  0.000

S = 22.2094   R-Sq = 22.2%   R-Sq(adj) = 21.9%

Analysis of Variance
Source            DF      SS      MS      F      P
Regression         1   41614   41614  84.37  0.000
Residual Error   296  146004     493
Total            297  187618

Unusual Observations
Obs  HISFOR_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 81        18   100.00  42.84    1.62     57.16     2.58R
 94        37   100.00  48.86    1.33     51.14     2.31R
118        54    98.95  54.43    1.32     44.52     2.01R
139         0    87.85  37.31    2.04     50.54     2.29R
141         0    89.95  37.31    2.04     52.64     2.38R
156         0    97.53  37.31    2.04     60.22     2.72R
160        22    96.09  44.39    1.52     51.70     2.33R
164        21   100.00  43.85    1.55     56.15     2.53R
180         1   100.00  37.66    2.01     62.34     2.82R
181         0    84.55  37.38    2.03     47.17     2.13R
214        87    15.53  64.69    1.90    -49.16    -2.22R
251        54     8.57  54.44    1.32    -45.88    -2.07R
252        72    14.76  59.93    1.56    -45.18    -2.04R
298        43     6.19  50.88    1.29    -44.69    -2.02R

R denotes an observation with a large standardized residual.
```

Figure A64. Scatterplot and regression analysis of VIBI-FQ score versus percent historic forest for area from 100 to 350 meters of assessment boundary.



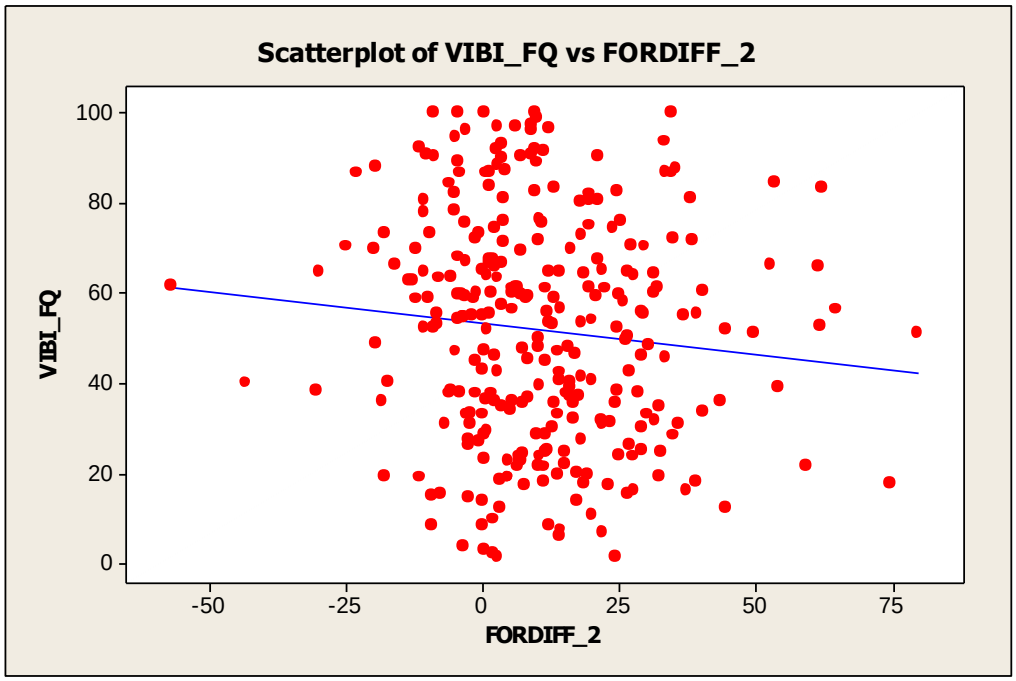

```
The regression equation is
VIBI_FQ = 36.5 + 0.478 HISFOR_2

Predictor      Coef  SE Coef      T      P
Constant     36.503    2.054  17.78  0.000
HISFOR_2    0.47791  0.05021   9.52  0.000

S = 22.0295   R-Sq = 23.4%   R-Sq(adj) = 23.2%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   43969  43969  90.60  0.000
Residual Error   296  143649    485
Total            297  187618

Unusual Observations
Obs  HISFOR_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 32       100    77.89  84.14    3.63     -6.25     -0.29 X
 38        14    91.63  43.34    1.56     48.29      2.20R
 40        81    31.13  75.05    2.75    -43.93     -2.01R
 64        89    53.25  79.22    3.15    -25.96     -1.19 X
101        50    16.28  60.27    1.55    -43.99     -2.00R
121        13    90.45  42.54    1.61     47.91      2.18R
131        98    69.83  83.13    3.53    -13.30     -0.61 X
132        95    64.92  81.87    3.41    -16.95     -0.78 X
134       100    73.47  84.29    3.64    -10.83     -0.50 X
135       100    70.15  84.28    3.64    -14.13     -0.65 X
140        33    96.71  52.21    1.28     44.51      2.02R
156         0    97.53  36.50    2.05     61.02      2.78R
157        92    60.09  80.25    3.25    -20.17     -0.93 X
164        22   100.00  47.19    1.37     52.81      2.40R
171        95    63.14  82.11    3.43    -18.97     -0.87 X
180        13   100.00  42.76    1.59     57.24      2.61R
190        26     3.85  48.71    1.32    -44.86     -2.04R
214        63    15.53  66.40    1.99    -50.87     -2.32R
251        40     8.57  55.73    1.34    -47.16     -2.14R
288        44     6.92  57.54    1.41    -50.63     -2.30R
298        33     6.19  52.43    1.28    -46.24     -2.10R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A65. Scatterplot and regression analysis of VIBI-FQ score versus difference between 2001 percent forest canopy and percent historic forest for area within 100 meters of assessment boundary.



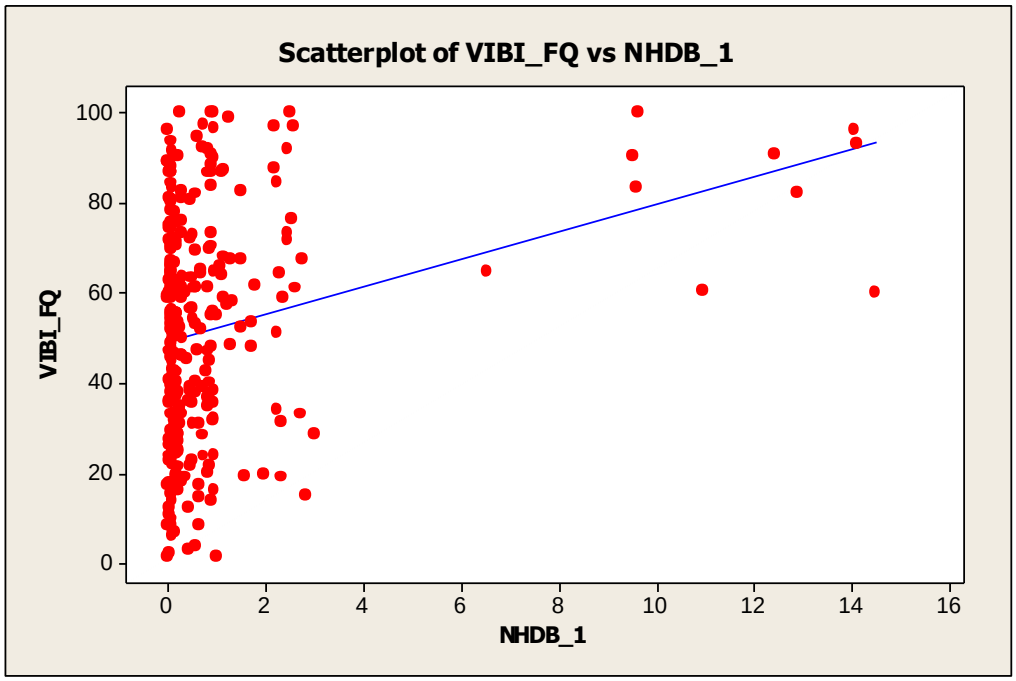

```
The regression equation is
VIBI_FQ = 53.2 - 0.159 FORDIFF_1

Predictor       Coef  SE Coef      T      P
Constant      53.175    1.500  35.45  0.000
FORDIFF_1   -0.15852  0.05101  -3.11  0.002

S = 24.7753   R-Sq = 3.2%   R-Sq(adj) = 2.8%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    5927.8  5927.8  9.66  0.002
Residual Error   296  181690.0   613.8
Total            297  187617.9

Unusual Observations
Obs  FORDIFF_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  1      -61.4    58.42  62.91    3.85     -4.49     -0.18 X
 11      -58.4    66.90  62.43    3.70      4.47      0.18 X
 36        7.7     1.54  51.95    1.44    -50.41     -2.04R
 47       74.5    15.33  41.37    3.66    -26.04     -1.06 X
 54        5.7     1.61  52.27    1.44    -50.66     -2.05R
 81       47.7   100.00  45.61    2.46     54.39      2.21R
101       76.2    16.28  41.10    3.74    -24.82     -1.01 X
108       72.7    38.46  41.66    3.57     -3.20     -0.13 X
146       78.5    60.74  40.73    3.85     20.01      0.82 X
156       45.0    97.53  46.04    2.35     51.49      2.09R
160       43.8    96.09  46.23    2.30     49.86      2.02R
177      -71.1    52.19  64.45    4.31    -12.26     -0.50 X
180       35.4   100.00  47.56    1.99     52.44      2.12R
257        0.0     3.14  53.18    1.50    -50.03     -2.02R
273        0.0     2.04  53.18    1.50    -51.14     -2.07R
286      -69.8    61.48  64.24    4.25     -2.75     -0.11 X
290       84.6    17.81  39.77    4.13    -21.96     -0.90 X
292       80.2    35.87  40.46    3.93     -4.59     -0.19 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A66. Scatterplot and regression analysis of VIBI-FQ score versus difference between 2001 percent forest canopy and percent historic forest for area from 100 to 350 meters of assessment boundary.



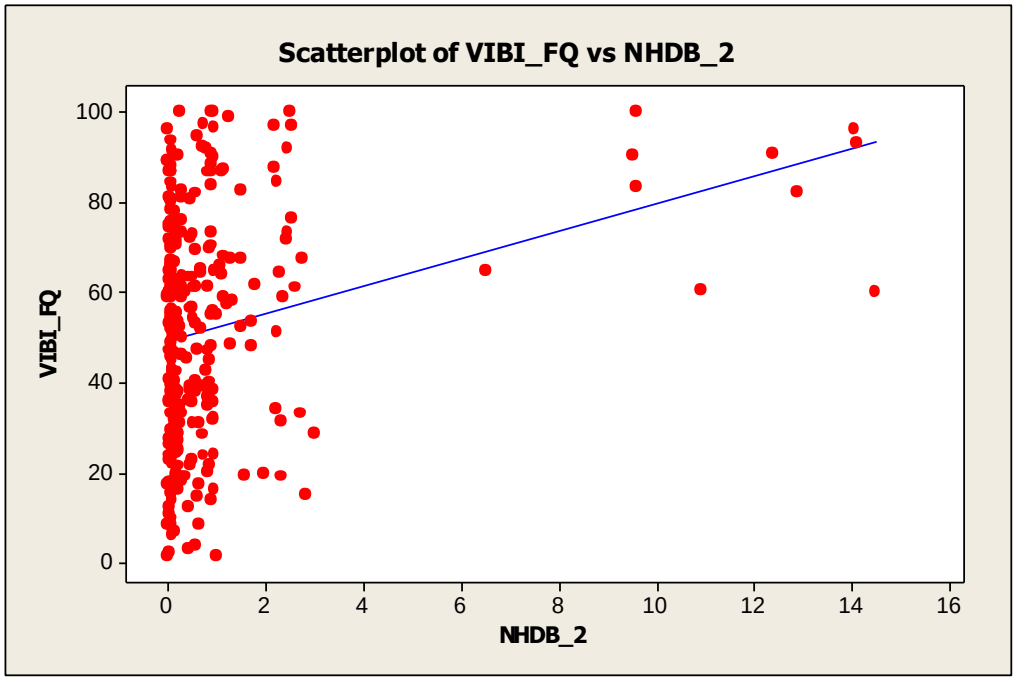

```
The regression equation is
VIBI_FQ = 53.3 - 0.136 FORDIFF_2

Predictor       Coef  SE Coef      T      P
Constant      53.298    1.688  31.58  0.000
FORDIFF_2   -0.13649  0.07946  -1.72  0.087

S = 25.0517   R-Sq = 1.0%   R-Sq(adj) = 0.7%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    1851.9  1851.9  2.95  0.087
Residual Error   296  185766.0   627.6
Total            297  187617.9

Unusual Observations
Obs  FORDIFF_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  2       61.4    66.07  44.91    4.27     21.15     0.86 X
 19       59.0    21.53  45.24    4.10    -23.71    -0.96 X
 36        2.7     1.54  52.93    1.59    -51.39    -2.06R
123      -43.3    40.01  59.21    4.54    -19.20    -0.78 X
167       53.9    39.00  45.94    3.72     -6.94    -0.28 X
180       34.5   100.00  48.59    2.37     51.41     2.06R
181       53.4    84.55  46.01    3.68     38.54     1.56 X
191       79.8    51.19  42.41    5.67      8.78     0.36 X
244       52.6    66.46  46.12    3.62     20.35     0.82 X
245       61.8    52.87  44.86    4.30      8.01     0.32 X
246       64.7    56.24  44.47    4.52     11.78     0.48 X
247       62.0    83.38  44.83    4.32     38.55     1.56 X
254      -30.5    38.46  57.46    3.59    -18.99    -0.77 X
257        0.1     3.14  53.28    1.68    -50.14    -2.01R
273        2.0     2.04  53.03    1.61    -50.99    -2.04R
286      -57.2    61.48  61.10    5.60      0.38     0.02 X
290       74.6    17.81  43.12    5.27    -25.31    -1.03 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A67. Scatterplot and regression analysis of VIBI-FQ score versus ODNR Natural Heritage density data for area within 100 meters of assessment boundary.



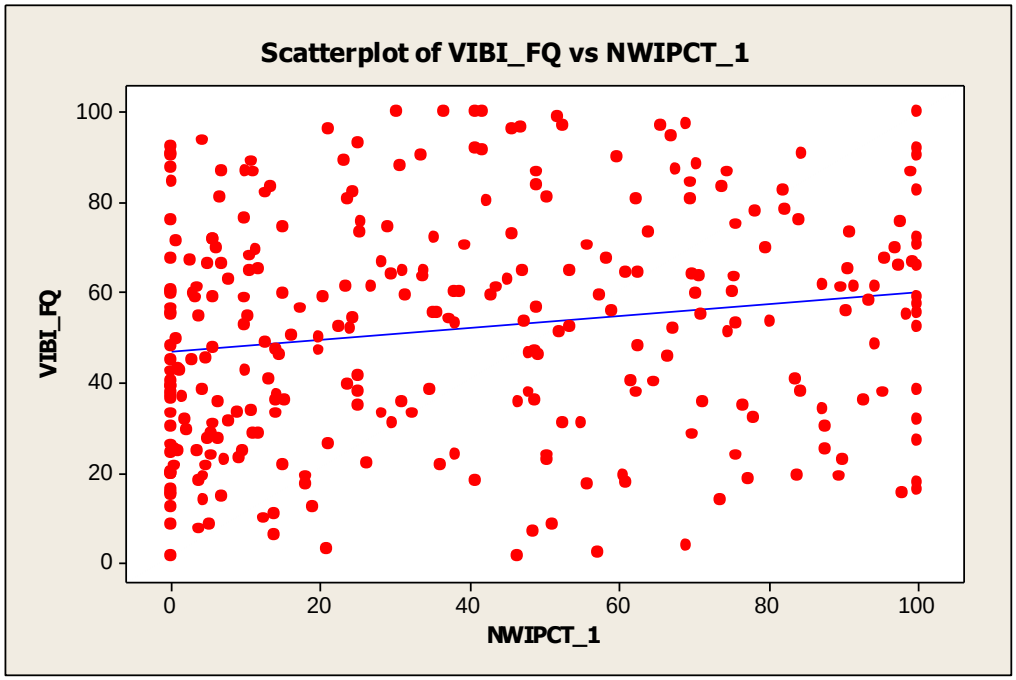

```
The regression equation is
VIBI_FQ = 49.1 + 3.06 NHDB_1

Predictor     Coef  SE Coef      T      P
Constant    49.085    1.530  32.09  0.000
NHDB_1      3.0589   0.6659   4.59  0.000

S = 24.3242   R-Sq = 6.7%   R-Sq(adj) = 6.3%

Analysis of Variance
Source            DF      SS      MS      F      P
Regression         1   12484   12484  21.10  0.000
Residual Error   296  175134     592
Total            297  187618

Unusual Observations
Obs  NHDB_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 54     1.0     1.61  52.07    1.41    -50.46    -2.08R
 94     9.6   100.00  78.50    5.98     21.50     0.91 X
 95     9.5    90.20  78.25    5.92     11.95     0.51 X
 96     9.6    83.47  78.46    5.97      5.01     0.21 X
103     6.5    64.84  69.06    4.01     -4.22    -0.18 X
117    14.1    93.01  92.26    8.92      0.75     0.03 X
149    14.5    60.17  93.48    9.18    -33.31    -1.48 X
160    14.1    96.09  92.14    8.89      3.95     0.17 X
180     0.3   100.00  49.86    1.47     50.14     2.07R
196    10.9    60.57  82.56    6.84    -21.98    -0.94 X
211    12.4    90.85  87.05    7.80      3.80     0.16 X
230    12.9    82.29  88.54    8.12     -6.24    -0.27 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A68. Scatterplot and regression analysis of VIBI-FQ score versus ODNR Natural Heritage density data for area from 100 to 350 meters of assessment boundary.



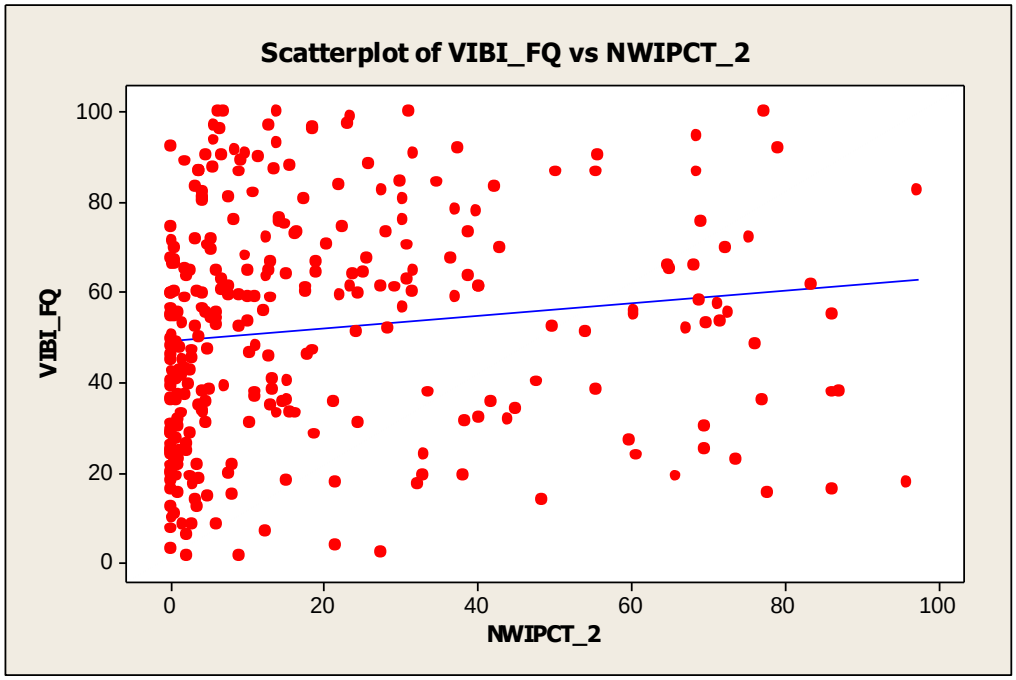

```
The regression equation is
VIBI_FQ = 49.1 + 3.06 NHDB_2

Predictor     Coef  SE Coef      T      P
Constant    49.084    1.530  32.09  0.000
NHDB_2      3.0615   0.6664   4.59  0.000

S = 24.3241   R-Sq = 6.7%   R-Sq(adj) = 6.3%

Analysis of Variance
Source            DF      SS      MS      F      P
Regression         1   12486   12486  21.10  0.000
Residual Error   296  175132     592
Total            297  187618

Unusual Observations
Obs  NHDB_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 54     1.0     1.61  52.07    1.41    -50.46    -2.08R
 94     9.6   100.00  78.50    5.98     21.50     0.91 X
 95     9.5    90.20  78.23    5.92     11.97     0.51 X
 96     9.6    83.47  78.46    5.97      5.01     0.21 X
103     6.5    64.84  69.06    4.01     -4.22    -0.18 X
117    14.1    93.01  92.27    8.92      0.74     0.03 X
149    14.5    60.17  93.48    9.18    -33.30    -1.48 X
160    14.1    96.09  92.14    8.89      3.95     0.17 X
180     0.3   100.00  49.86    1.47     50.14     2.07R
196    10.9    60.57  82.56    6.84    -21.99    -0.94 X
211    12.4    90.85  87.05    7.80      3.80     0.16 X
230    12.9    82.29  88.56    8.12     -6.26    -0.27 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A69. Scatterplot and regression analysis of VIBI-FQ score versus NWI data for area within 100 meters of assessment boundary.



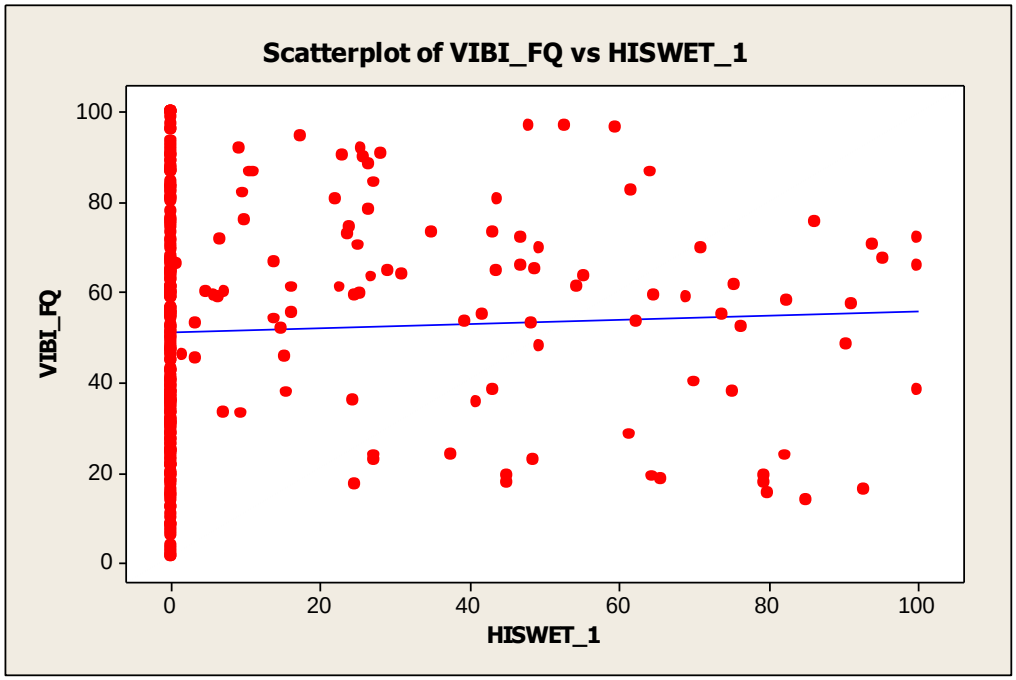

```
The regression equation is
VIBI_FQ = 46.7 + 0.132 NWIPCT_1

Predictor      Coef  SE Coef      T      P
Constant     46.718    2.196  21.28  0.000
NWIPCT_1    0.13222  0.04306   3.07  0.002

S = 24.7846   R-Sq = 3.1%   R-Sq(adj) = 2.8%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    5791.5  5791.5  9.43  0.002
Residual Error   296  181826.4   614.3
Total            297  187617.9

Unusual Observations
Obs  NWIPCT_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 36        46     1.54  52.85    1.47    -51.31     -2.07R
190        69     3.85  55.84    1.94    -51.99     -2.10R
273        57     2.04  54.28    1.64    -52.24     -2.11R

R denotes an observation with a large standardized residual.
```

Figure A70. Scatterplot and regression analysis of VIBI-FQ score versus NWI data for area from 100 to 350 meters of assessment boundary.



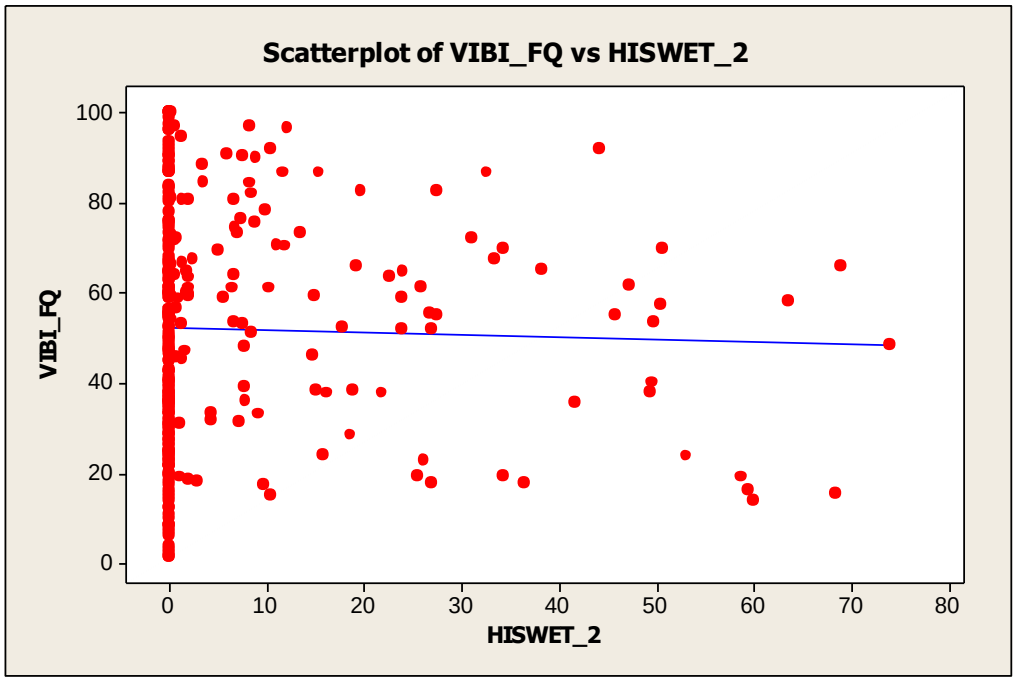

```
The regression equation is
VIBI_FQ = 49.1 + 0.139 NWIPCT_2

Predictor      Coef  SE Coef      T      P
Constant     49.112    1.872  26.24  0.000
NWIPCT_2    0.13944  0.06123   2.28  0.023

S = 24.9586   R-Sq = 1.7%   R-Sq(adj) = 1.4%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    3230.7  3230.7  5.19  0.023
Residual Error   296  184387.2   622.9
Total            297  187617.9

Unusual Observations
Obs  NWIPCT_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 43      72.4    69.80  59.21    3.55     10.59     0.43 X
 46      97.5    82.64  62.71    4.99     19.94     0.82 X
 79       6.2   100.00  49.98    1.66     50.02     2.01R
 94      77.3   100.00  59.89    3.83     40.11     1.63 X
101      86.1    16.28  61.12    4.33    -44.84    -1.82 X
164       6.8   100.00  50.07    1.64     49.93     2.00R
188      75.4    72.20  59.63    3.72     12.57     0.51 X
199      76.2    48.48  59.74    3.77    -11.26    -0.46 X
214      77.8    15.53  59.96    3.86    -44.44    -1.80 X
229      79.3    91.75  60.16    3.94     31.58     1.28 X
270      73.6    22.82  59.38    3.62    -36.56    -1.48 X
273      27.4     2.04  52.93    1.53    -50.89    -2.04R
276      87.2    37.77  61.27    4.39    -23.50    -0.96 X
280      86.3    37.60  61.14    4.34    -23.54    -0.96 X
282      86.2    55.15  61.13    4.34     -5.98    -0.24 X
286      83.6    61.48  60.76    4.19      0.72     0.03 X
290      96.1    17.81  62.51    4.91    -44.70    -1.83 X
292      77.2    35.87  59.88    3.82    -24.01    -0.97 X
294      72.7    55.60  59.25    3.57     -3.65    -0.15 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A71. Scatterplot and regression analysis of VIBI-FQ score versus historic wetland data for area within 100 meters of assessment boundary.



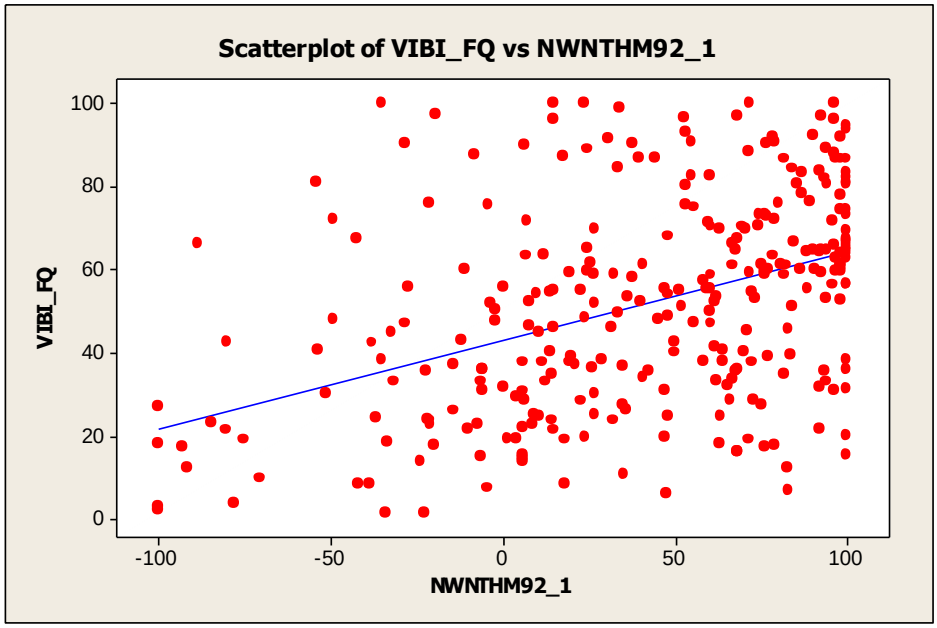

```
The regression equation is
VIBI_FQ = 51.2 + 0.0482 HISWET_1

Predictor      Coef  SE Coef      T      P
Constant     51.150    1.656  30.88  0.000
HISWET_1    0.04825  0.05692   0.85  0.397

S = 25.1458   R-Sq = 0.2%   R-Sq(adj) = 0.0%

Analysis of Variance
Source            DF        SS     MS     F      P
Regression         1     454.3  454.3  0.72  0.397
Residual Error   296  187163.6  632.3
Total            297  187617.9

Unusual Observations
Obs  HISWET_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 27       100    38.41  55.97    5.11    -17.56     -0.71 X
 30        79    17.79  54.97    4.00    -37.18     -1.50 X
 48        94    70.46  55.68    4.78     14.78      0.60 X
 60        82    23.51  55.11    4.15    -31.60     -1.27 X
 66        82    58.20  55.13    4.17      3.07      0.12 X
 74        79    19.30  54.98    4.00    -35.68     -1.44 X
 93        86    75.54  55.30    4.36     20.24      0.82 X
100        95    67.50  55.74    4.85     11.76      0.48 X
101        93    16.28  55.62    4.71    -39.34     -1.59 X
120        91    57.47  55.55    4.63      1.93      0.08 X
163        85    13.83  55.25    4.31    -41.43     -1.67 X
188       100    72.20  55.97    5.11     16.23      0.66 X
199        90    48.48  55.51    4.59     -7.04     -0.28 X
205        76    52.25  54.83    3.84     -2.58     -0.10 X
214        80    15.53  55.01    4.03    -39.48     -1.59 X
231       100    65.81  55.97    5.12      9.83      0.40 X
276        75    37.77  54.78    3.78    -17.01     -0.68 X
282        74    55.15  54.71    3.71      0.44      0.02 X
286        75    61.48  54.79    3.79      6.70      0.27 X

X denotes an observation whose X value gives it large leverage.
```

Figure A72. Scatterplot and regression analysis of VIBI-FQ score versus historic wetland data for area from 100 to 350 meters of assessment boundary.



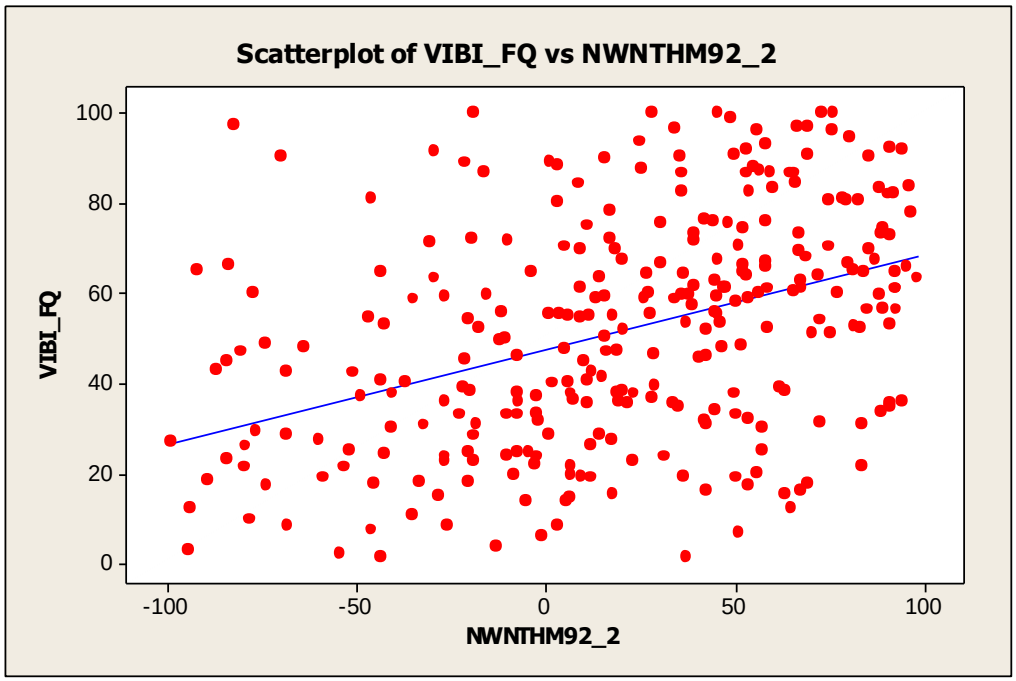

```
The regression equation is
VIBI_FQ = 52.1 - 0.048 HISWET_2

Predictor      Coef  SE Coef      T      P
Constant     52.147    1.613  32.33  0.000
HISWET_2    -0.0483   0.1014  -0.48  0.634

S = 25.1666   R-Sq = 0.1%   R-Sq(adj) = 0.0%

Analysis of Variance
Source            DF        SS     MS     F      P
Regression         1     143.6  143.6  0.23  0.634
Residual Error   296  187474.3  633.4
Total            297  187617.9

Unusual Observations
Obs  HISWET_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 36       0.0     1.54  52.15    1.61    -50.61    -2.02R
 43      50.7    69.80  49.70    4.68     20.10     0.81 X
 54       0.0     1.61  52.15    1.61    -50.53    -2.01R
 60      53.1    23.51  49.59    4.91    -26.07    -1.06 X
 66      63.5    58.20  49.08    5.93      9.12     0.37 X
101      59.5    16.28  49.28    5.54    -32.99    -1.34 X
120      50.5    57.47  49.71    4.67      7.77     0.31 X
123      49.5    40.01  49.76    4.56     -9.74    -0.39 X
163      60.0    13.83  49.25    5.58    -35.42    -1.44 X
199      74.0    48.48  48.57    6.97     -0.10    -0.00 X
214      68.4    15.53  48.84    6.42    -33.32    -1.37 X
229      44.2    91.75  50.02    4.06     41.73     1.68 X
231      69.0    65.81  48.82    6.47     16.99     0.70 X
275      58.6    18.88  49.32    5.45    -30.44    -1.24 X
276      49.3    37.77  49.77    4.55    -12.00    -0.48 X
278      49.7    53.49  49.75    4.59      3.75     0.15 X
282      45.8    55.15  49.94    4.21      5.21     0.21 X
286      47.3    61.48  49.86    4.36     11.62     0.47 X
287      41.6    35.48  50.14    3.82    -14.65    -0.59 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A73. Scatterplot and regression analysis of VIBI-FQ score versus 1992 NLCD natural minus human-dominated land use data for area within 100 meters of assessment boundary.



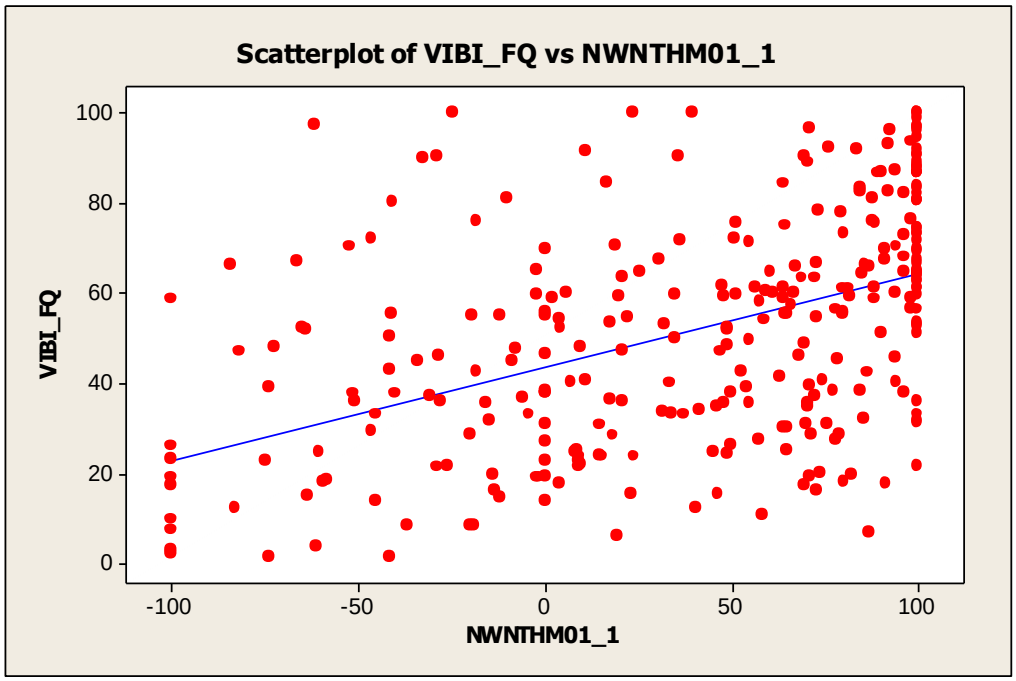

```
The regression equation is
VIBI_FQ = 43.1 + 0.213 NWNTHM92_1

Predictor       Coef  SE Coef      T      P
Constant      43.068    1.713  25.14  0.000
NWNTHM92_1   0.21272  0.02650   8.03  0.000

S = 22.8157   R-Sq = 17.9%   R-Sq(adj) = 17.6%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   33533  33533  64.42  0.000
Residual Error   296  154085    521
Total            297  187618

Unusual Observations
Obs  NWNTHM92_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 47         100    15.33  64.34    2.04    -49.01    -2.16R
 53          83    12.51  60.64    1.72    -48.13    -2.12R
 56         -88    66.44  24.35    3.67     42.09     1.87 X
 58         -71     9.54  28.05    3.24    -18.51    -0.82 X
 94          24   100.00  48.07    1.40     51.93     2.28R
104         -54    80.93  31.56    2.85     49.37     2.18R
118          34    98.95  50.31    1.33     48.64     2.14R
121         -28    90.45  37.06    2.26     53.39     2.35R
130         -75    18.83  27.11    3.35     -8.28    -0.37 X
139          -8    87.85  41.30    1.86     46.55     2.05R
141           6    89.95  44.43    1.61     45.52     2.00R
156         -20    97.53  38.90    2.08     58.63     2.58R
160          15    96.09  46.24    1.49     49.85     2.19R
164         -35   100.00  35.70    2.40     64.30     2.83R
180          15   100.00  46.17    1.50     53.83     2.36R
187         -80    21.22  25.97    3.48     -4.74    -0.21 X
189        -100    18.20  21.80    3.97     -3.59    -0.16 X
190         -78     3.85  26.48    3.42    -22.62    -1.00 X
257        -100     3.14  21.80    3.97    -18.65    -0.83 X
259         -80    42.47  26.15    3.46     16.32     0.72 X
262         -85    23.02  25.07    3.59     -2.05    -0.09 X
273        -100     2.04  21.80    3.97    -19.76    -0.88 X
274         -93    17.23  23.32    3.79     -6.09    -0.27 X
284        -100    27.03  21.80    3.97      5.23     0.23 X
288          83     6.92  60.73    1.73    -53.81    -2.37R
291         -92    12.19  23.60    3.76    -11.41    -0.51 X
298          48     6.19  53.20    1.33    -47.01    -2.06R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A74. Scatterplot and regression analysis of VIBI-FQ score versus 1992 natural minus human-dominated land use data for area from 100 to 350 meters of assessment boundary.



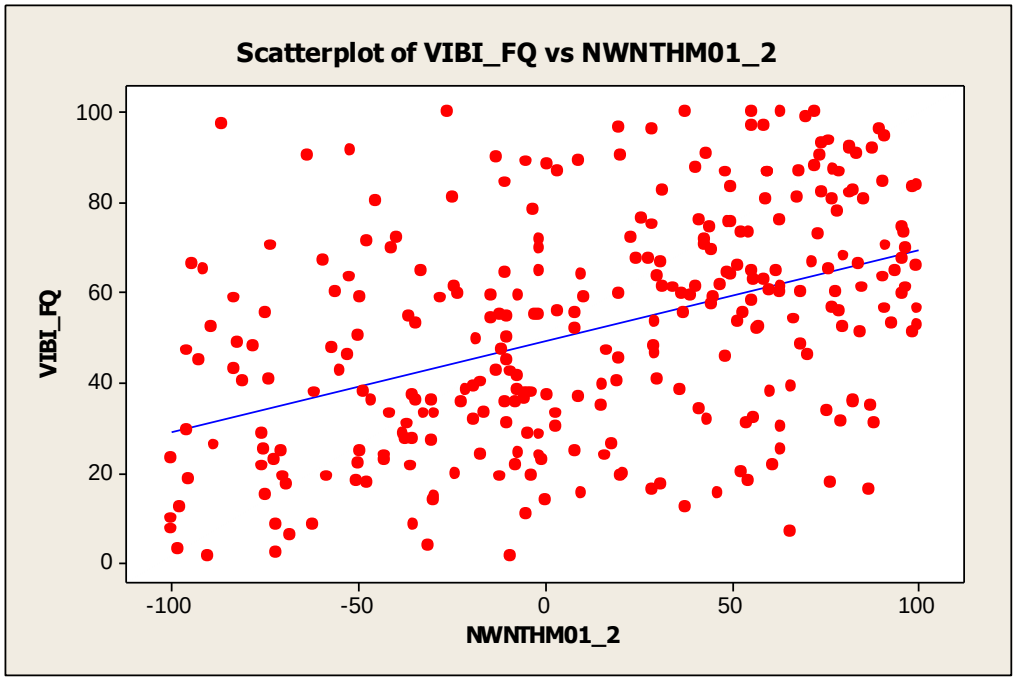

```
The regression equation is
VIBI_FQ = 47.5 + 0.209 NWNTHM92_2

Predictor       Coef  SE Coef      T      P
Constant      47.547    1.447  32.86  0.000
NWNTHM92_2   0.20880  0.02743   7.61  0.000

S = 23.0240   R-Sq = 16.4%   R-Sq(adj) = 16.1%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   30707  30707  57.93  0.000
Residual Error   296  156911    530
Total            297  187618

Unusual Observations
Obs  NWNTHM92_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 38       -29.2    91.63  41.45    1.91     50.17     2.19R
 53        65.1    12.51  61.14    1.81    -48.63    -2.12R
 54        37.3     1.61  55.33    1.41    -53.72    -2.34R
121       -69.9    90.45  32.95    2.82     57.50     2.52R
156       -82.2    97.53  30.38    3.12     67.15     2.94R
164       -19.0   100.00  43.58    1.72     56.42     2.46R
178       -89.2    18.58  28.93    3.29    -10.35    -0.45 X
180        28.1   100.00  53.42    1.35     46.58     2.03R
256       -91.9    65.27  28.36    3.36     36.91     1.62 X
257       -94.4     3.14  27.83    3.42    -24.69    -1.08 X
284       -99.1    27.03  26.86    3.54      0.17     0.01 X
288        51.2     6.92  58.25    1.58    -51.33    -2.23R
291       -94.0    12.19  27.93    3.41    -15.74    -0.69 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A75. Scatterplot and regression analysis of VIBI-FQ score versus 2001 NLCD natural minus human-dominated land use data for area within 100 meters of assessment boundary.



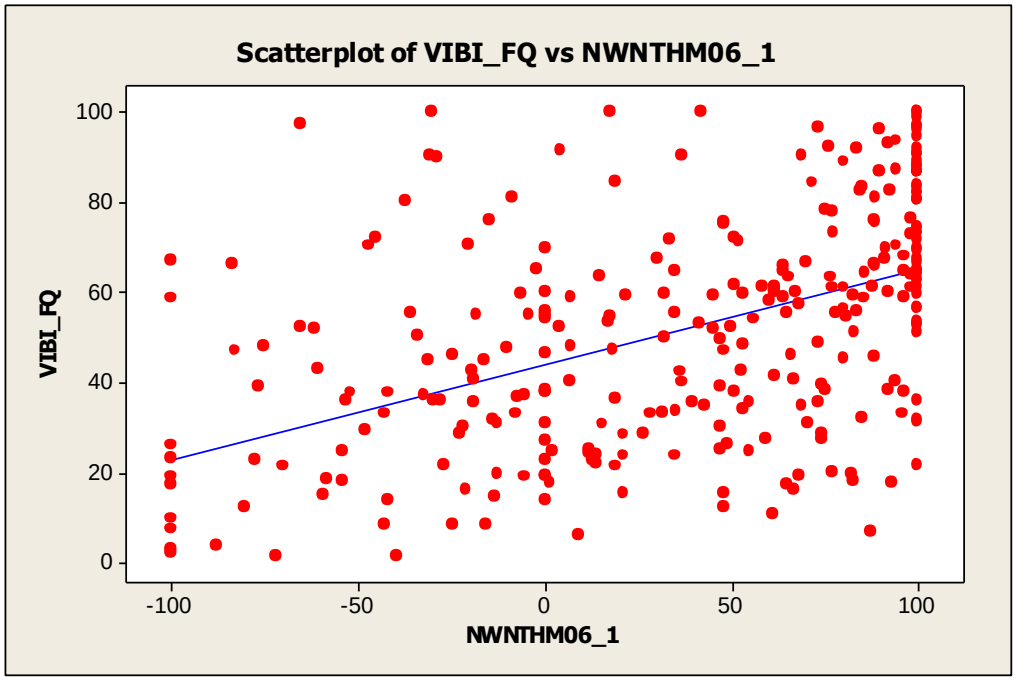

```
The regression equation is
VIBI_FQ = 43.6 + 0.207 NWNTHM01_1

Predictor       Coef  SE Coef      T      P
Constant      43.617    1.569  27.79  0.000
NWNTHM01_1   0.20744  0.02269   9.14  0.000

S = 22.2320   R-Sq = 22.0%   R-Sq(adj) = 21.8%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   41317  41317  83.59  0.000
Residual Error   296  146301    494
Total            297  187618

Unusual Observations
Obs  NWNTHM01_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  1        -100    58.42  22.87    3.42     35.54     1.62 X
 38          11    91.63  45.92    1.44     45.70     2.06R
 58        -100     9.54  22.87    3.42    -13.33    -0.61 X
 84          58    10.68  55.65    1.35    -44.97    -2.03R
 94          24   100.00  48.50    1.34     51.50     2.32R
121         -29    90.45  37.62    2.02     52.82     2.39R
130        -100    18.83  22.87    3.42     -4.04    -0.18 X
141         -33    89.95  36.84    2.08     53.11     2.40R
143        -100    25.73  22.87    3.42      2.86     0.13 X
156         -62    97.53  30.82    2.63     66.71     3.02R
164         -24   100.00  38.54    1.94     61.46     2.78R
180          40   100.00  51.84    1.29     48.16     2.17R
232        -100     7.25  22.87    3.42    -15.62    -0.71 X
257        -100     3.14  22.87    3.42    -19.73    -0.90 X
262        -100    23.02  22.87    3.42      0.14     0.01 X
263         -40    80.16  35.23    2.22     44.93     2.03R
273        -100     2.04  22.87    3.42    -20.83    -0.95 X
274        -100    17.23  22.87    3.42     -5.64    -0.26 X
288          87     6.92  61.62    1.68    -54.71    -2.47R
290          92    17.81  62.60    1.75    -44.79    -2.02R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A76. Scatterplot and regression analysis of VIBI-FQ score versus 2001 NLCD natural minus human-dominated land use data for area from 100 to 350 meters of assessment boundary.



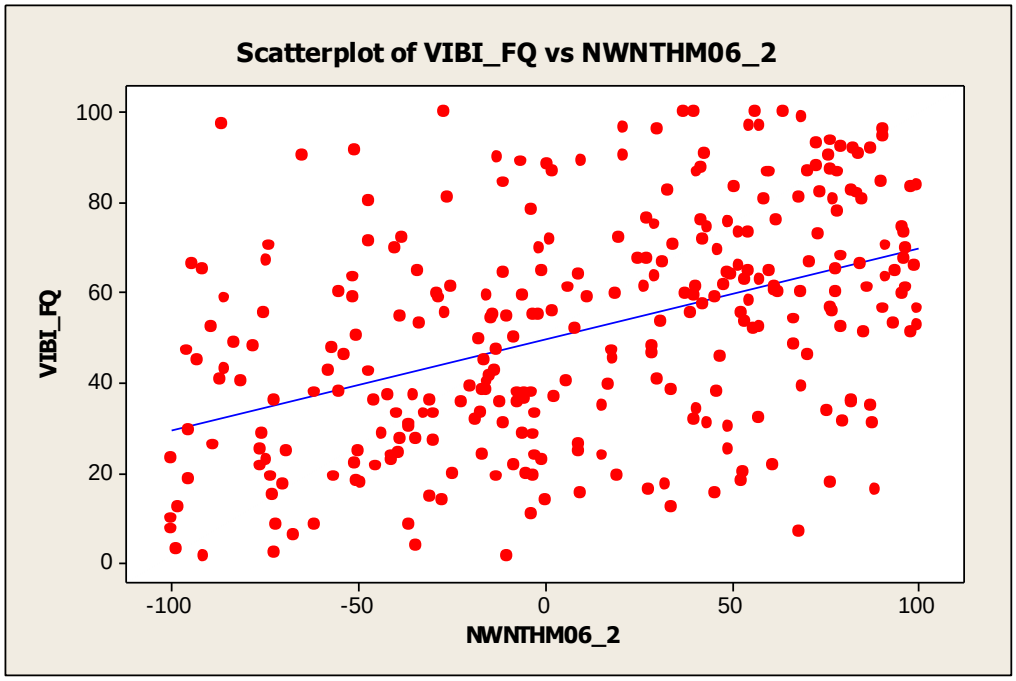

```
The regression equation is
VIBI_FQ = 49.2 + 0.201 NWNTHM01_2

Predictor       Coef  SE Coef      T      P
Constant      49.235    1.341  36.71  0.000
NWNTHM01_2   0.20111  0.02358   8.53  0.000

S = 22.5562   R-Sq = 19.7%   R-Sq(adj) = 19.5%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   37019  37019  72.76  0.000
Residual Error   296  150599    509
Total            297  187618

Unusual Observations
Obs  NWNTHM01_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 38         -52    91.63  38.84    2.01     52.78     2.35R
 54          -9     1.61  47.42    1.40    -45.80    -2.03R
101          87    16.28  66.72    2.18    -50.43    -2.25R
121         -63    90.45  36.48    2.22     53.96     2.40R
156         -87    97.53  31.84    2.68     65.69     2.93R
164         -26   100.00  44.02    1.59     55.98     2.49R
288          66     6.92  62.46    1.81    -55.54    -2.47R
290          76    17.81  64.62    1.99    -46.81    -2.08R

R denotes an observation with a large standardized residual.
```

Figure A77. Scatterplot and regression analysis of VIBI-FQ score versus 2006 NLCD natural minus human-dominated land use data for area within 100 meters of assessment boundary.



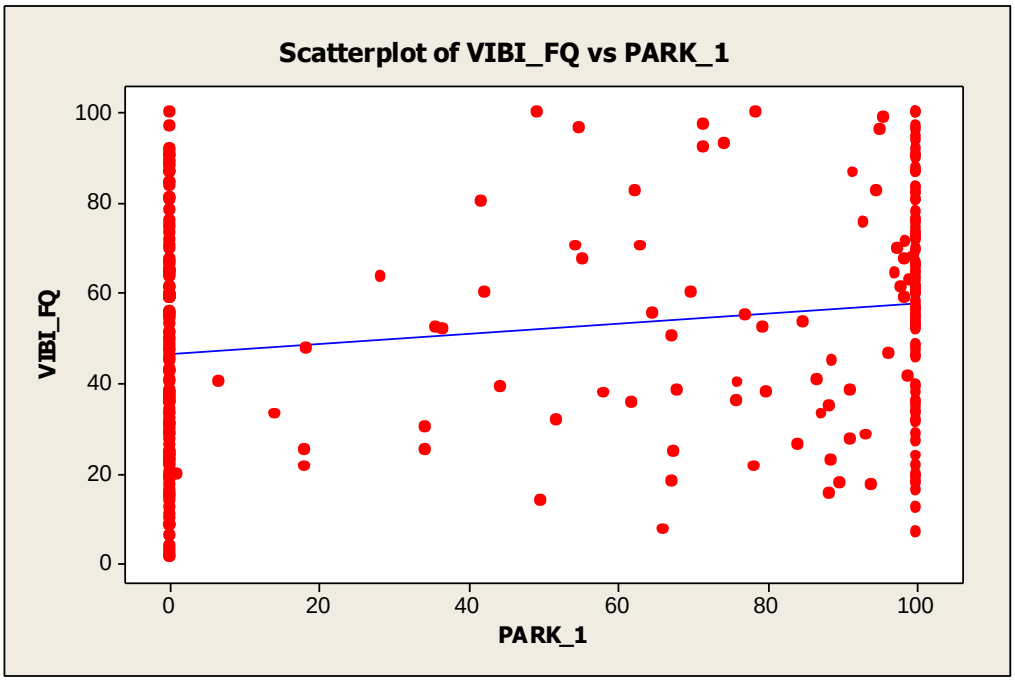

```
The regression equation is
VIBI_FQ = 44.0 + 0.211 NWNTHM06_1

Predictor       Coef  SE Coef      T      P
Constant      43.982    1.517  28.99  0.000
NWNTHM06_1   0.21068  0.02209   9.54  0.000

S = 22.0191   R-Sq = 23.5%   R-Sq(adj) = 23.2%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   44105  44105  90.97  0.000
Residual Error   296  143513    485
Total            297  187618

Unusual Observations
Obs  NWNTHM06_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
  1        -100    58.42  22.91    3.29     35.50     1.63 X
 11        -100    66.90  22.91    3.29     43.98     2.02RX
 38           4    91.63  44.92    1.47     46.71     2.13R
 58        -100     9.54  22.91    3.29    -13.37    -0.61 X
 84          61    10.68  56.88    1.38    -46.20    -2.10R
 94          18   100.00  47.70    1.35     52.30     2.38R
121         -30    90.45  37.57    1.96     52.88     2.41R
130        -100    18.83  22.91    3.29     -4.08    -0.19 X
141         -29    89.95  37.96    1.93     51.99     2.37R
143        -100    25.73  22.91    3.29      2.81     0.13 X
156         -65    97.53  30.21    2.60     67.32     3.08R
164         -30   100.00  37.66    1.96     62.34     2.84R
180          42   100.00  52.83    1.28     47.17     2.15R
232        -100     7.25  22.91    3.29    -15.66    -0.72 X
257        -100     3.14  22.91    3.29    -19.77    -0.91 X
262        -100    23.02  22.91    3.29      0.10     0.00 X
263         -37    80.16  36.13    2.08     44.03     2.01R
273        -100     2.04  22.91    3.29    -20.88    -0.96 X
274        -100    17.23  22.91    3.29     -5.68    -0.26 X
288          87     6.92  62.32    1.68    -55.40    -2.52R
290          93    17.81  63.52    1.77    -45.71    -2.08R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A78. Scatterplot and regression analysis of VIBI-FQ score versus 2006 NLCD natural minus human-dominated land use data for area from 100 to 350 meters of assessment boundary.



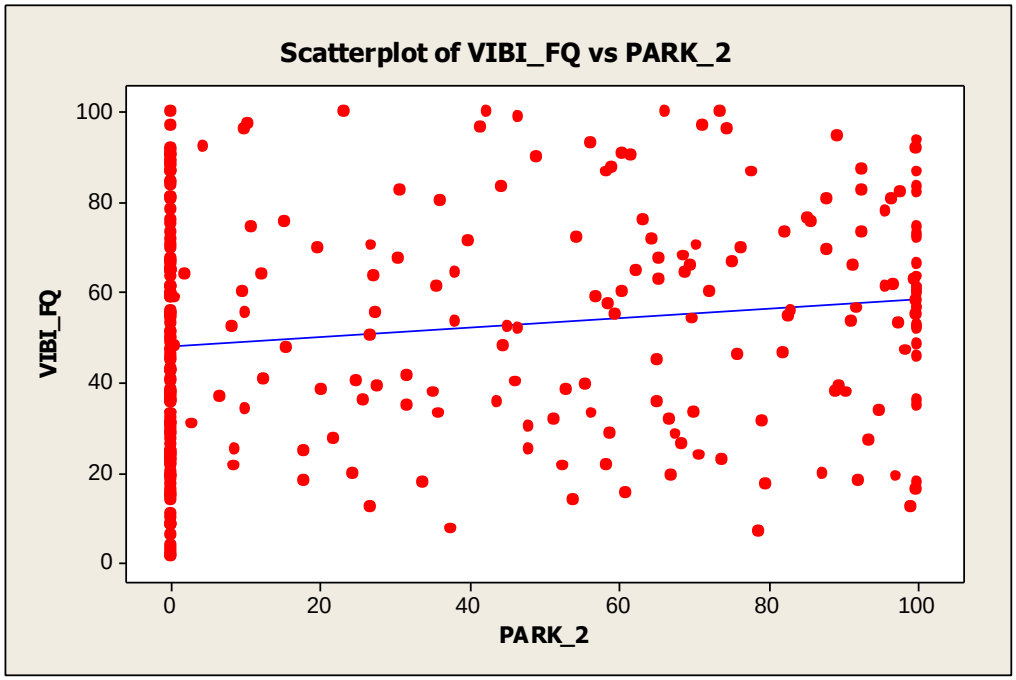

```
The regression equation is
VIBI_FQ = 49.6 + 0.202 NWNTHM06_2

Predictor       Coef  SE Coef      T      P
Constant      49.584    1.327  37.37  0.000
NWNTHM06_2   0.20192  0.02323   8.69  0.000

S = 22.4718   R-Sq = 20.3%   R-Sq(adj) = 20.1%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   38143  38143  75.53  0.000
Residual Error   296  149474    505
Total            297  187618

Unusual Observations
Obs  NWNTHM06_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 38         -51    91.63  39.37    1.94     52.26     2.33R
 54         -10     1.61  47.52    1.39    -45.91    -2.05R
101          89    16.28  67.50    2.22    -51.21    -2.29R
121         -65    90.45  36.54    2.19     53.91     2.41R
156         -86    97.53  32.13    2.61     65.39     2.93R
164         -27   100.00  44.15    1.57     55.85     2.49R
288          68     6.92  63.32    1.86    -56.41    -2.52R
290          76    17.81  64.98    2.00    -47.17    -2.11R

R denotes an observation with a large standardized residual.
```

Figure A79. Scatterplot and regression analysis of VIBI-FQ score versus percent parkland for area within 100 meters of assessment boundary.



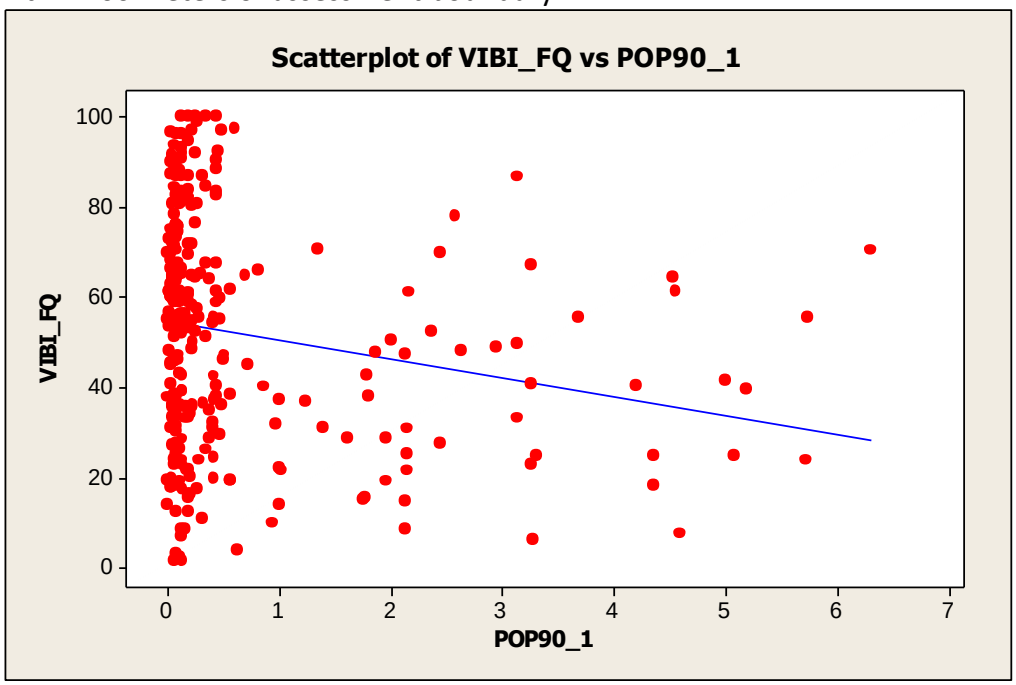

```
The regression equation is
VIBI_FQ = 46.6 + 0.113 PARK_1

Predictor      Coef  SE Coef      T      P
Constant     46.619    2.014  23.14  0.000
PARK_1      0.11252  0.03077   3.66  0.000

S = 24.6263   R-Sq = 4.3%   R-Sq(adj) = 4.0%

Analysis of Variance
Source            DF        SS      MS      F      P
Regression         1    8107.6  8107.6  13.37  0.000
Residual Error   296  179510.3   606.5
Total            297  187617.9

Unusual Observations
Obs  PARK_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 89       0    96.84  46.62    2.01     50.22     2.05R
180       0   100.00  46.62    2.01     53.38     2.17R
288     100     6.92  57.85    2.18    -50.93    -2.08R

R denotes an observation with a large standardized residual.
```

Figure A80. Scatterplot and regression analysis of VIBI-FQ score versus percent parkland for area from 100 to 350 meters of assessment boundary.



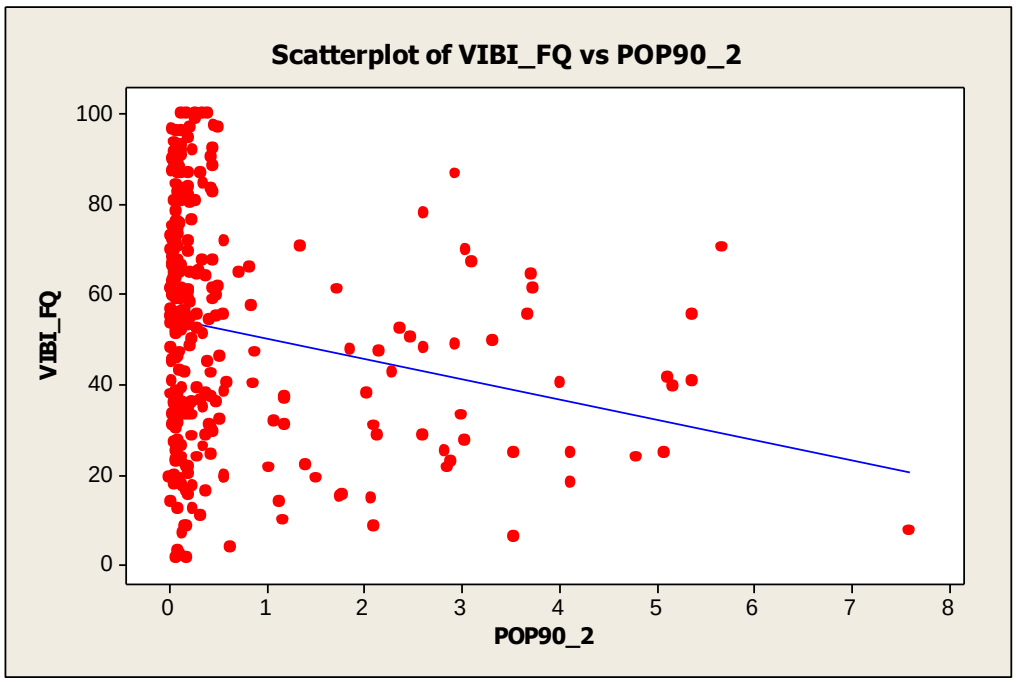

```
The regression equation is
VIBI_FQ = 48.1 + 0.106 PARK_2

Predictor      Coef  SE Coef      T      P
Constant     48.080    1.948  24.68  0.000
PARK_2      0.10601  0.03722   2.85  0.005

S = 24.8383   R-Sq = 2.7%   R-Sq(adj) = 2.3%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    5003.5  5003.5  8.11  0.005
Residual Error   296  182614.4   616.9
Total            297  187617.9

Unusual Observations
Obs  PARK_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
180       0   100.00  48.08    1.95     51.92     2.10R
288      79     6.92  56.41    2.16    -49.49    -2.00R

R denotes an observation with a large standardized residual.
```

Figure A81. Scatterplot and regression analysis of VIBI-FQ score versus 1990 population density for area within 100 meters of assessment boundary.



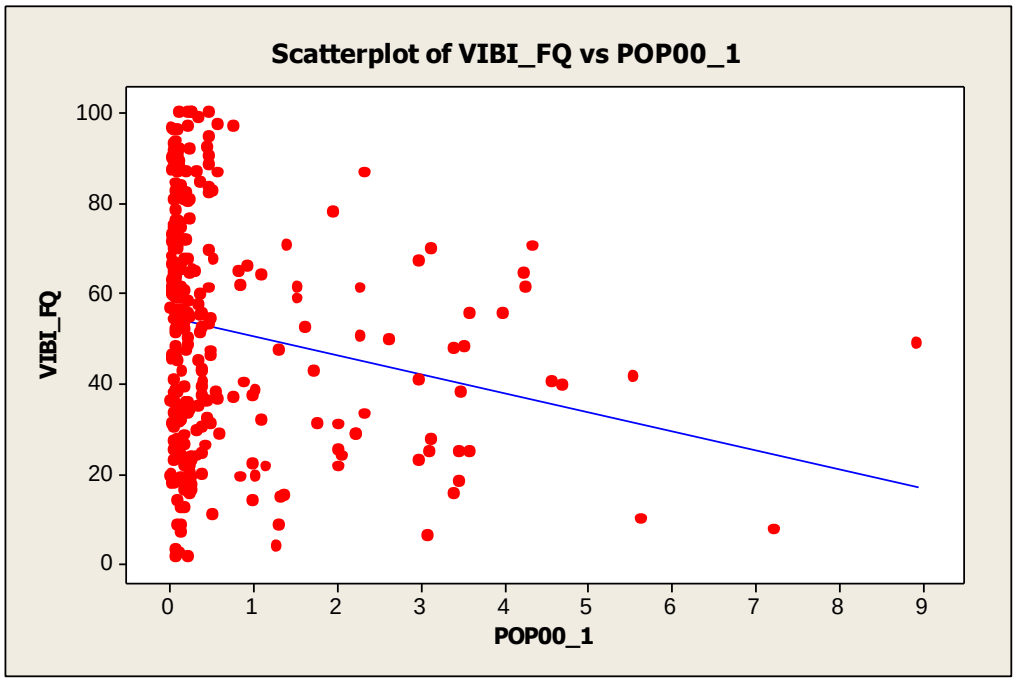

```
The regression equation is
VIBI_FQ = 54.5 - 4.16 POP90_1

Predictor     Coef  SE Coef      T      P
Constant    54.495    1.635  33.33  0.000
POP90_1     -4.162    1.231  -3.38  0.001

S = 24.7034   R-Sq = 3.7%   R-Sq(adj) = 3.4%

Analysis of Variance
Source            DF        SS      MS      F      P
Regression         1    6982.2  6982.2  11.44  0.001
Residual Error   296  180635.6   610.3
Total            297  187617.9

Unusual Observations
Obs  POP90_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 11     3.27    66.90  40.90    3.53     26.00     1.06 X
 12     3.69    55.53  39.14    4.01     16.39     0.67 X
 23     5.18    39.57  32.94    5.76      6.63     0.28 X
 35     5.72    23.55  30.70    6.41     -7.15    -0.30 X
 36     0.07     1.54  54.19    1.59    -52.65    -2.14R
 54     0.15     1.61  53.88    1.56    -52.26    -2.12R
 67     5.07    24.60  33.38    5.64     -8.78    -0.37 X
 82     4.35    18.18  36.37    4.78    -18.19    -0.75 X
 83     4.35    24.59  36.37    4.78    -11.78    -0.49 X
185     3.27    40.78  40.90    3.53     -0.12    -0.00 X
197     4.53    64.32  35.64    4.99     28.69     1.19 X
198     4.55    61.29  35.54    5.02     25.75     1.06 X
200     5.73    55.54  30.66    6.42     24.87     1.04 X
201     6.30    70.03  28.28    7.10     41.75     1.76 X
207     3.27    22.87  40.90    3.53    -18.03    -0.74 X
226     4.99    41.39  33.71    5.54      7.68     0.32 X
232     4.60     7.25  35.36    5.07    -28.11    -1.16 X
257     0.09     3.14  54.13    1.59    -50.99    -2.07R
267     4.20    40.28  37.00    4.61      3.27     0.13 X
273     0.11     2.04  54.02    1.57    -51.99    -2.11R
297     3.30    24.70  40.74    3.57    -16.04    -0.66 X
298     3.27     6.19  40.86    3.54    -34.68    -1.42 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A82. Scatterplot and regression analysis of VIBI-FQ score versus 1990 population density for area from 100 to 350 meters of assessment boundary.



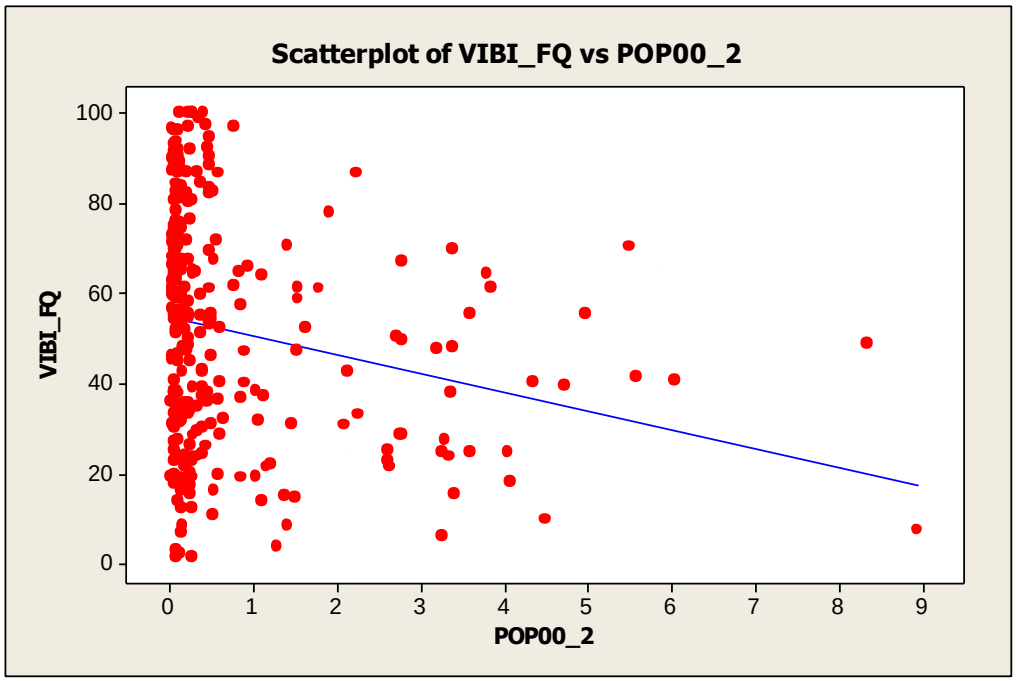

```
The regression equation is
VIBI_FQ = 54.8 - 4.53 POP90_2

Predictor     Coef  SE Coef      T      P
Constant    54.842    1.628  33.68  0.000
POP90_2     -4.527    1.183  -3.82  0.000

S = 24.5763   R-Sq = 4.7%   R-Sq(adj) = 4.4%

Analysis of Variance
Source            DF        SS      MS      F      P
Regression         1    8836.2  8836.2  14.63  0.000
Residual Error   296  178781.7   604.0
Total            297  187617.9

Unusual Observations
Obs  POP90_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 12     3.69    55.53  38.14    3.85     17.39     0.72 X
 23     5.17    39.57  31.43    5.52      8.14     0.34 X
 35     4.79    23.55  33.17    5.08     -9.62    -0.40 X
 36     0.07     1.54  54.52    1.59    -52.98    -2.16R
 54     0.18     1.61  54.03    1.54    -52.42    -2.14R
 67     5.07    24.60  31.88    5.40     -7.28    -0.30 X
 82     4.14    18.18  36.12    4.34    -17.94    -0.74 X
 83     4.14    24.59  36.12    4.35    -11.52    -0.48 X
185     5.36    40.78  30.56    5.74     10.22     0.43 X
197     3.71    64.32  38.05    3.87     26.28     1.08 X
198     3.73    61.29  37.96    3.89     23.33     0.96 X
200     5.36    55.54  30.58    5.73     24.96     1.04 X
201     5.67    70.03  29.18    6.09     40.85     1.72 X
226     5.11    41.39  31.70    5.45      9.70     0.40 X
232     7.60     7.25  20.43    8.33    -13.18    -0.57 X
257     0.09     3.14  54.45    1.58    -51.30    -2.09R
267     4.03    40.28  36.62    4.22      3.66     0.15 X
273     0.11     2.04  54.33    1.57    -52.29    -2.13R
297     3.53    24.70  38.87    3.67    -14.16    -0.58 X
298     3.53     6.19  38.86    3.67    -32.68    -1.34 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A83. Scatterplot and regression analysis of VIBI-FQ score versus 2000 population density for area within 100 meters of assessment boundary.



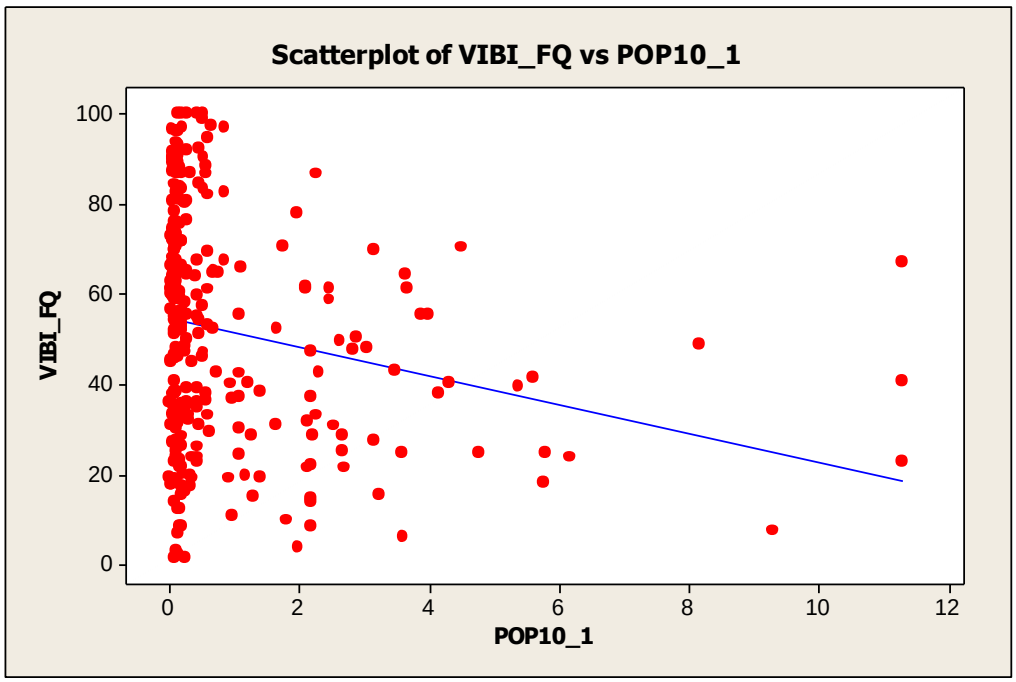

```
The regression equation is
VIBI_FQ = 54.7 - 4.21 POP00_1

Predictor     Coef  SE Coef      T      P
Constant    54.701    1.637  33.42  0.000
POP00_1     -4.212    1.171  -3.60  0.000

S = 24.6433   R-Sq = 4.2%   R-Sq(adj) = 3.9%

Analysis of Variance
Source            DF        SS      MS      F      P
Regression         1    7859.4  7859.4  12.94  0.000
Residual Error   296  179758.5   607.3
Total            297  187617.9

Unusual Observations
Obs  POP00_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 12     3.59    55.53  39.56    3.69     15.97      0.66 X
 23     4.70    39.57  34.92    4.91      4.65      0.19 X
 36     0.08     1.54  54.36    1.59    -52.82     -2.15R
 39     3.49    38.06  40.01    3.58     -1.95     -0.08 X
 54     0.23     1.61  53.73    1.52    -52.12     -2.12R
 58     5.63     9.54  30.98    5.96    -21.44     -0.90 X
 67     3.59    24.60  39.57    3.69    -14.97     -0.61 X
 82     3.46    18.18  40.12    3.55    -21.94     -0.90 X
 83     3.46    24.59  40.12    3.55    -15.53     -0.64 X
197     4.24    64.32  36.83    4.41     27.50      1.13 X
198     4.26    61.29  36.76    4.42     24.52      1.01 X
200     3.98    55.54  37.93    4.12     17.60      0.72 X
201     4.33    70.03  36.44    4.51     33.59      1.39 X
224     3.53    48.18  39.85    3.62      8.34      0.34 X
226     5.57    41.39  31.25    5.89     10.14      0.42 X
232     7.24     7.25  24.21    7.81    -16.96     -0.73 X
235     8.95    48.96  17.00    9.78     31.96      1.41 X
257     0.08     3.14  54.36    1.59    -51.22     -2.08R
267     4.57    40.28  35.44    4.77      4.83      0.20 X
273     0.12     2.04  54.18    1.57    -52.14     -2.12R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A84. Scatterplot and regression analysis of VIBI-FQ score versus 2000 population density for area from 100 to 350 meters of assessment boundary.



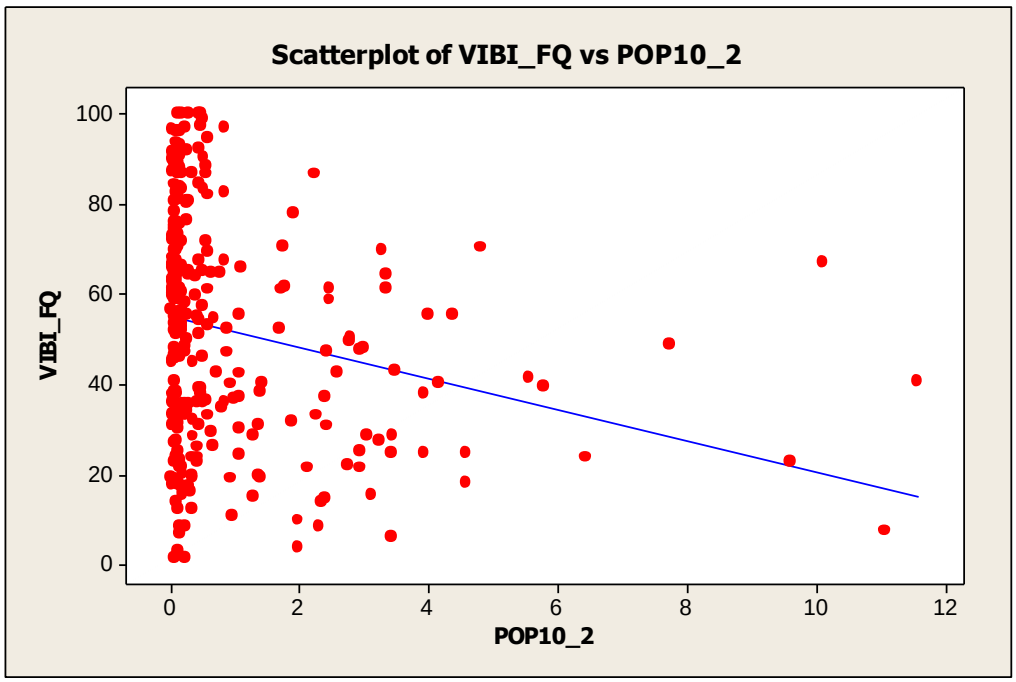

```
The regression equation is
VIBI_FQ = 54.9 - 4.19 POP00_2

Predictor     Coef  SE Coef      T      P
Constant    54.858    1.631  33.64  0.000
POP00_2     -4.195    1.098  -3.82  0.000

S = 24.5775   R-Sq = 4.7%   R-Sq(adj) = 4.4%

Analysis of Variance
Source            DF        SS      MS      F      P
Regression         1    8818.4  8818.4  14.60  0.000
Residual Error   296  178799.5   604.1
Total            297  187617.9

Unusual Observations
Obs  POP00_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 23     4.71    39.57  35.09    4.60      4.48      0.19 X
 36     0.08     1.54  54.53    1.59    -52.99     -2.16R
 54     0.27     1.61  53.72    1.51    -52.11     -2.12R
 58     4.48     9.54  36.05    4.37    -26.51     -1.10 X
 82     4.06    18.18  37.81    3.93    -19.63     -0.81 X
 83     4.06    24.59  37.83    3.93    -13.24     -0.55 X
185     6.04    40.78  29.51    6.01     11.27      0.47 X
197     3.80    64.32  38.91    3.67     25.42      1.05 X
198     3.85    61.29  38.73    3.71     22.56      0.93 X
200     4.98    55.54  33.98    4.88     21.56      0.89 X
201     5.49    70.03  31.83    5.42     38.20      1.59 X
226     5.58    41.39  31.45    5.52      9.94      0.42 X
232     8.95     7.25  17.30    9.15    -10.05     -0.44 X
235     8.35    48.96  19.83    8.49     29.13      1.26 X
257     0.08     3.14  54.52    1.59    -51.38     -2.09R
267     4.35    40.28  36.63    4.22      3.65      0.15 X
273     0.12     2.04  54.34    1.57    -52.30     -2.13R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A85. Scatterplot and regression analysis of VIBI-FQ score versus 2010 population density for area within 100 meters of assessment boundary.



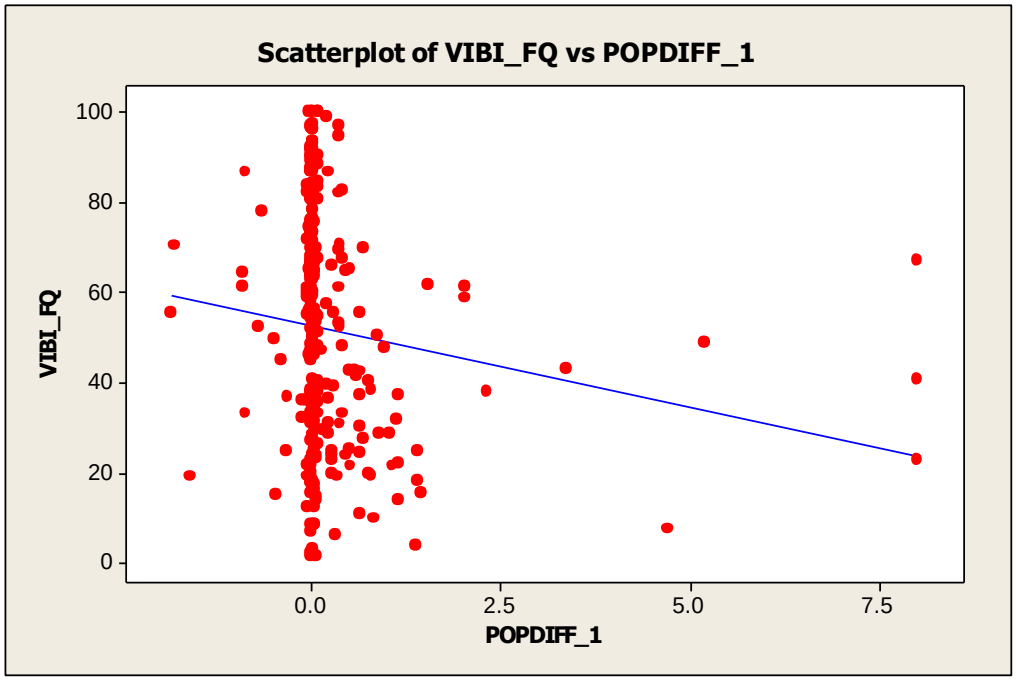

```
The regression equation is
VIBI_FQ = 54.7 - 3.19 POP10_1

Predictor      Coef  SE Coef      T      P
Constant     54.677    1.610  33.96  0.000
POP10_1     -3.1866   0.8375  -3.81  0.000

S = 24.5822   R-Sq = 4.7%   R-Sq(adj) = 4.3%

Analysis of Variance
Source            DF        SS      MS      F      P
Regression         1    8749.0  8749.0  14.48  0.000
Residual Error   296  178868.9   604.3
Total            297  187617.9

Unusual Observations
Obs  POP10_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 11     11.3    66.90  18.75    8.81     48.14     2.10RX
 23      5.4    39.57  37.50    4.02      2.07     0.09 X
 35      6.2    23.55  35.00    4.64    -11.45    -0.47 X
 36      0.1     1.54  54.45    1.58    -52.91    -2.16R
 54      0.2     1.61  53.95    1.53    -52.34    -2.13R
 67      4.8    24.60  39.52    3.53    -14.92    -0.61 X
 82      5.8    18.18  36.30    4.32    -18.12    -0.75 X
 83      5.8    24.59  36.27    4.33    -11.68    -0.48 X
185     11.3    40.78  18.70    8.82     22.08     0.96 X
207     11.3    22.87  18.75    8.81      4.12     0.18 X
226      5.6    41.39  36.83    4.19      4.56     0.19 X
232      9.3     7.25  25.04    7.18    -17.78    -0.76 X
235      8.2    48.96  28.68    6.24     20.28     0.85 X
257      0.1     3.14  54.31    1.57    -51.16    -2.09R
273      0.1     2.04  54.29    1.56    -52.25    -2.13R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A86. Scatterplot and regression analysis of VIBI-FQ score versus 2010 population density for area from 100 to 350 meters of assessment boundary.



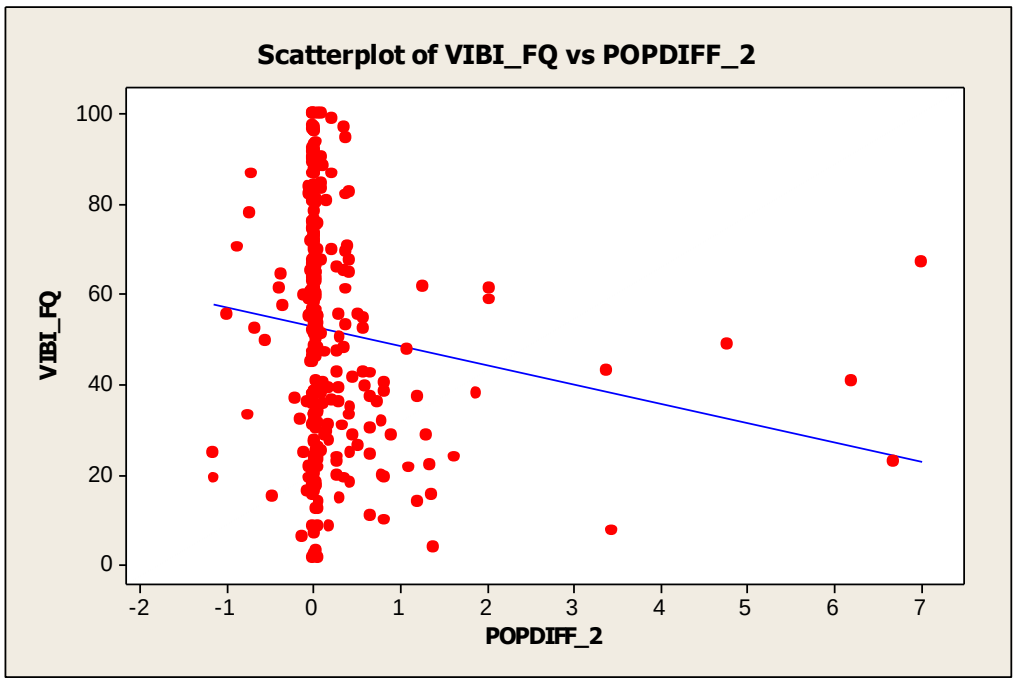

```
The regression equation is
VIBI_FQ = 55.0 - 3.46 POP10_2

Predictor      Coef  SE Coef      T      P
Constant     54.954    1.616  34.01  0.000
POP10_2     -3.4631   0.8528  -4.06  0.000

S = 24.5030   R-Sq = 5.3%   R-Sq(adj) = 5.0%

Analysis of Variance
Source            DF        SS      MS      F      P
Regression         1    9901.0  9901.0  16.49  0.000
Residual Error   296  177716.9   600.4
Total            297  187617.9

Unusual Observations
Obs  POP10_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 11     10.1    66.90  19.97    7.97     46.93     2.03RX
 23      5.8    39.57  34.96    4.39      4.61     0.19 X
 35      6.4    23.55  32.71    4.92     -9.16    -0.38 X
 36      0.1     1.54  54.71    1.59    -53.17    -2.17R
 54      0.2     1.61  54.12    1.53    -52.51    -2.15R
185     11.6    40.78  14.88    9.21     25.90     1.14 X
201      4.8    70.03  38.36    3.60     31.67     1.31 X
207      9.6    22.87  21.78    7.53      1.09     0.05 X
226      5.6    41.39  35.68    4.22      5.71     0.24 X
232     11.1     7.25  16.69    8.77     -9.43    -0.41 X
235      7.7    48.96  28.18    5.99     20.78     0.87 X
257      0.1     3.14  54.53    1.57    -51.39    -2.10R
273      0.1     2.04  54.53    1.57    -52.49    -2.15R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A87. Scatterplot and regression analysis of VIBI-FQ score versus difference between 1990 and 2010 population densities for area within 100 meters of assessment boundary.



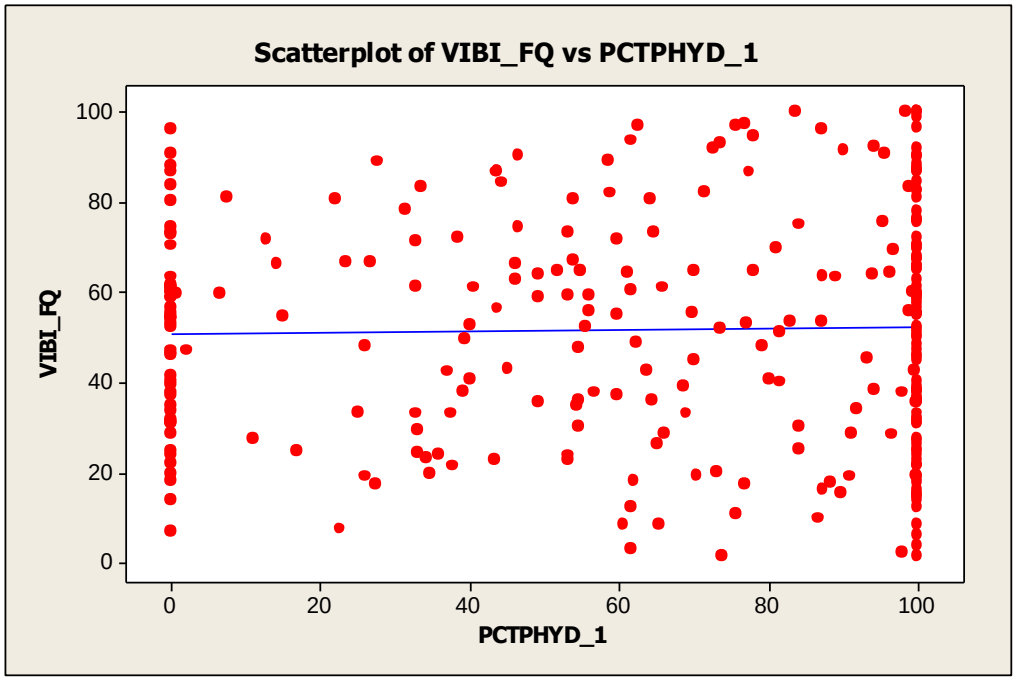

```
The regression equation is
VIBI_FQ = 52.7 - 3.62 POPDIFF_1

Predictor     Coef  SE Coef      T      P
Constant    52.739    1.490  35.40  0.000
POPDIFF_1   -3.623    1.451  -2.50  0.013

S = 24.9153   R-Sq = 2.1%   R-Sq(adj) = 1.7%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    3869.4  3869.4  6.23  0.013
Residual Error   296  183748.5   620.8
Total            297  187617.9

Unusual Observations
Obs  POPDIFF_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 11       8.01    66.90  23.73   11.34     43.16      1.95 X
 36      -0.00     1.54  52.75    1.49    -51.21     -2.06R
 54       0.08     1.61  52.45    1.47    -50.83     -2.04R
154       3.37    43.05  40.52    4.75      2.53      0.10 X
185       8.02    40.78  23.67   11.36     17.10      0.77 X
207       8.01    22.87  23.73   11.34     -0.86     -0.04 X
232       4.70     7.25  35.70    6.62    -28.44     -1.18 X
235       5.21    48.96  33.87    7.33     15.09      0.63 X
273       0.01     2.04  52.70    1.49    -50.66     -2.04R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A88. Scatterplot and regression analysis of VIBI-FQ score versus difference between 1990 and 2010 population densities for area from 100 to 350 meters of assessment boundary.



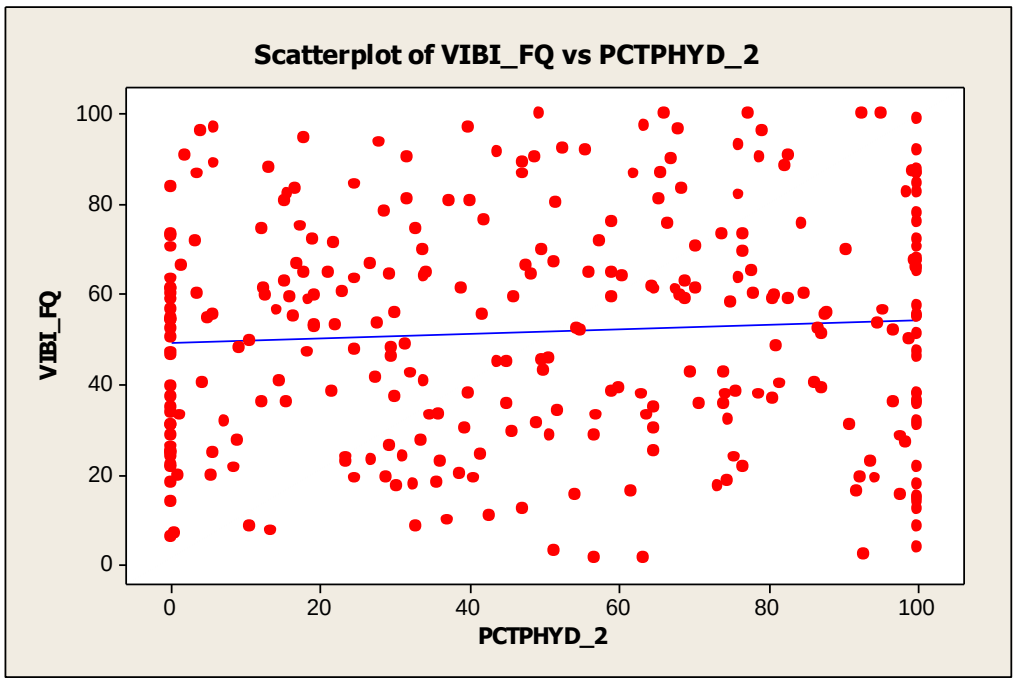

```
The regression equation is
VIBI_FQ = 52.8 - 4.28 POPDIFF_2

Predictor    Coef  SE Coef      T      P
Constant   52.835    1.499  35.24  0.000
POPDIFF_2  -4.277    1.711  -2.50  0.013

S = 24.9146   R-Sq = 2.1%   R-Sq(adj) = 1.7%

Analysis of Variance
Source            DF        SS      MS     F      P
Regression         1    3879.3  3879.3  6.25  0.013
Residual Error   296  183738.6   620.7
Total            297  187617.9

Unusual Observations
Obs  POPDIFF_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 11       7.00    66.90  22.87   11.67     44.02     2.00 X
 36      -0.00     1.54  52.84    1.50    -51.30    -2.06R
 54       0.06     1.61  52.57    1.47    -50.96    -2.05R
154       3.37    43.05  38.41    5.56      4.64     0.19 X
185       6.21    40.78  26.28   10.32     14.50     0.64 X
207       6.69    22.87  24.21   11.14     -1.34    -0.06 X
232       3.45     7.25  38.08    5.68    -30.83    -1.27 X
235       4.78    48.96  32.38    7.91     16.58     0.70 X
273       0.01     2.04  52.79    1.49    -50.75    -2.04R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A89. Scatterplot and regression analysis of VIBI-FQ score versus percent hydric soils for area within 100 meters of assessment boundary.



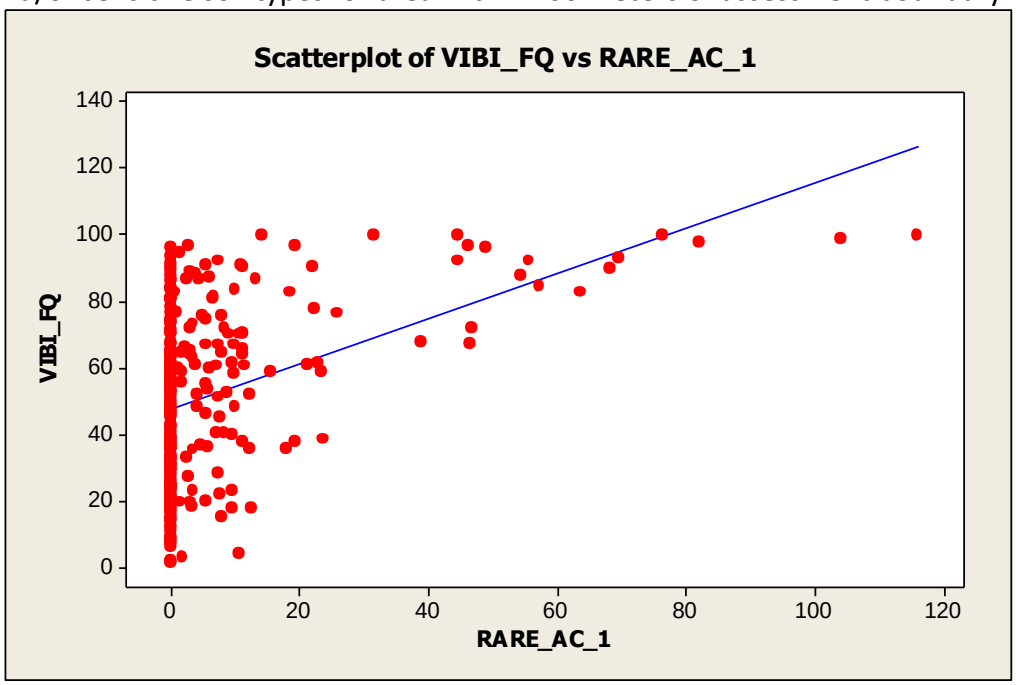

```
The regression equation is
VIBI_FQ = 50.9 + 0.0142 PCTPHYD_1

Predictor      Coef  SE Coef      T      P
Constant     50.908    2.881  17.67  0.000
PCTPHYD_1   0.01422  0.03878   0.37  0.714

S = 25.1705   R-Sq = 0.0%   R-Sq(adj) = 0.0%

Analysis of Variance
Source            DF        SS     MS     F      P
Regression         1      85.2   85.2  0.13  0.714
Residual Error   296  187532.7  633.6
Total            297  187617.9

Unusual Observations
Obs  PCTPHYD_1  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 36         74     1.54  51.95    1.50    -50.41    -2.01R
 54        100     1.61  52.33    2.02    -50.72    -2.02R
273         98     2.04  52.30    1.96    -50.26    -2.00R

R denotes an observation with a large standardized residual.
```

Figure A90. Scatterplot and regression analysis of VIBI-FQ score versus percent hydric soils for area from 100 to 350 meters of assessment boundary.



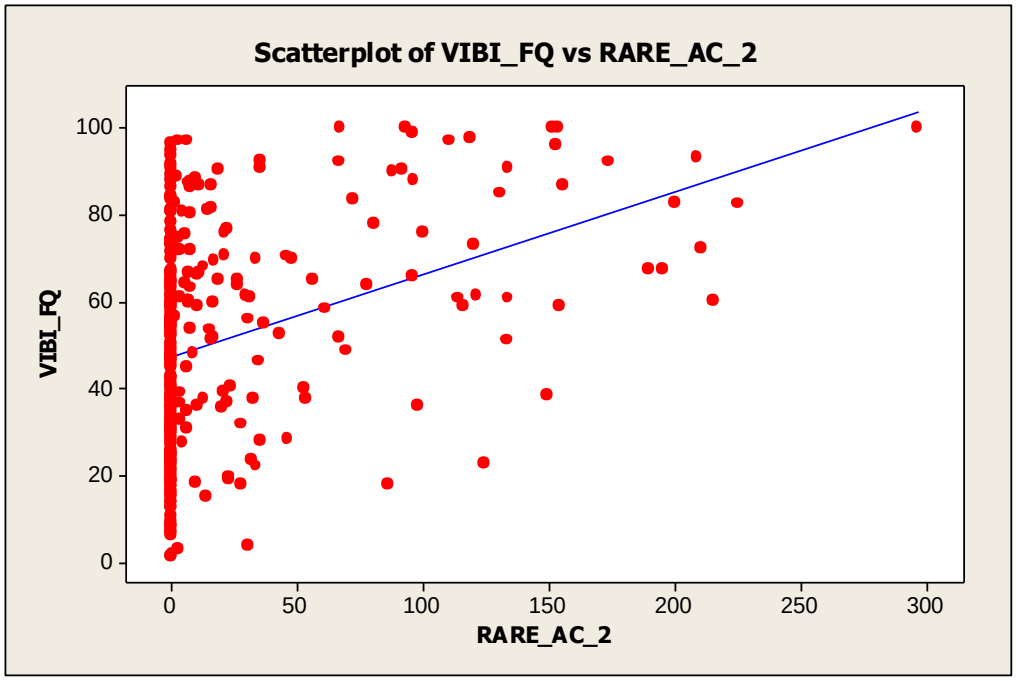

```
The regression equation is
VIBI_FQ = 49.3 + 0.0516 PCTPHYD_2

Predictor      Coef  SE Coef      T      P
Constant     49.255    2.542  19.38  0.000
PCTPHYD_2   0.05155  0.04192   1.23  0.220

S = 25.1122   R-Sq = 0.5%   R-Sq(adj) = 0.2%

Analysis of Variance
Source            DF        SS     MS     F      P
Regression         1     953.8  953.8  1.51  0.220
Residual Error   296  186664.1  630.6
Total            297  187617.9

Unusual Observations
Obs  PCTPHYD_2  VIBI_FQ    Fit  SE Fit  Residual  St Resid
 36         63     1.54  52.52    1.56    -50.98    -2.03R
 54         57     1.61  52.18    1.48    -50.57    -2.02R
190        100     3.85  54.41    2.56    -50.56    -2.02R
273         93     2.04  54.03    2.31    -51.99    -2.08R

R denotes an observation with a large standardized residual.
```

Figure A91. Scatterplot and regression analysis of VIBI-FQ score versus presence of rare plant species and/or sensitive soil types for area within 100 meters of assessment boundary.



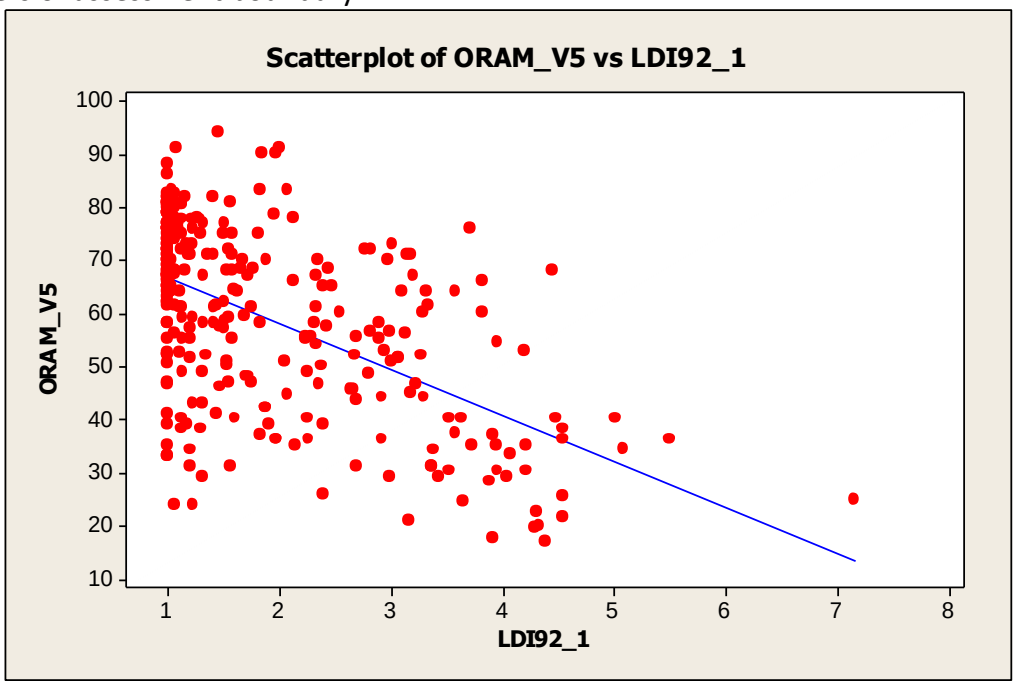

```
The regression equation is
VIBI_FQ = 47.5 + 0.681 RARE_AC_1

Predictor      Coef  SE Coef      T      P
Constant     47.507    1.423  33.38  0.000
RARE_AC_1   0.68113  0.08422   8.09  0.000

S = 22.7842   R-Sq = 18.1%   R-Sq(adj) = 17.8%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   33958  33958  65.41  0.000
Residual Error   296  153660    519
Total            297  187618

Unusual Observations
Obs  RARE_AC_1  VIBI_FQ     Fit  SE Fit  Residual  St Resid
 36          0     1.54   47.51    1.42    -45.97     -2.02R
 54          0     1.61   47.51    1.42    -45.89     -2.02R
 63          1    94.68   48.51    1.38     46.17      2.03R
 79         45   100.00   77.93    3.49     22.07      0.98 X
 81        116   100.00  126.64    9.34    -26.64     -1.28 X
 89          3    96.84   49.40    1.35     47.44      2.09R
 90         47    67.30   79.28    3.64    -11.98     -0.53 X
 94         76   100.00   99.50    6.04      0.50      0.02 X
 99         64    82.55   90.87    5.01     -8.32     -0.37 X
106         56    92.20   85.44    4.36      6.76      0.30 X
117         70    93.01   94.85    5.48     -1.85     -0.08 X
118        104    98.95  118.45    8.34    -19.49     -0.92 X
139         55    87.85   84.66    4.27      3.19      0.14 X
140         46    96.71   79.08    3.62     17.64      0.78 X
141         68    89.95   94.00    5.38     -4.05     -0.18 X
156         82    97.53  103.48    6.52     -5.96     -0.27 X
160         49    96.09   80.80    3.82     15.29      0.68 X
181         57    84.55   86.56    4.49     -2.01     -0.09 X
188         47    72.20   79.35    3.65     -7.16     -0.32 X
190         11     3.85   54.75    1.37    -50.90     -2.24R
195          0    96.34   47.51    1.42     48.83      2.15R
229         45    91.75   77.83    3.48     13.92      0.62 X
250          0    93.36   47.51    1.42     45.85      2.02R
257          2     3.14   48.82    1.37    -45.68     -2.01R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A92. Scatterplot and regression analysis of VIBI-FQ score versus presence of rare plant species and/or sensitive soil types for area from 100 to 350 meters of assessment boundary.



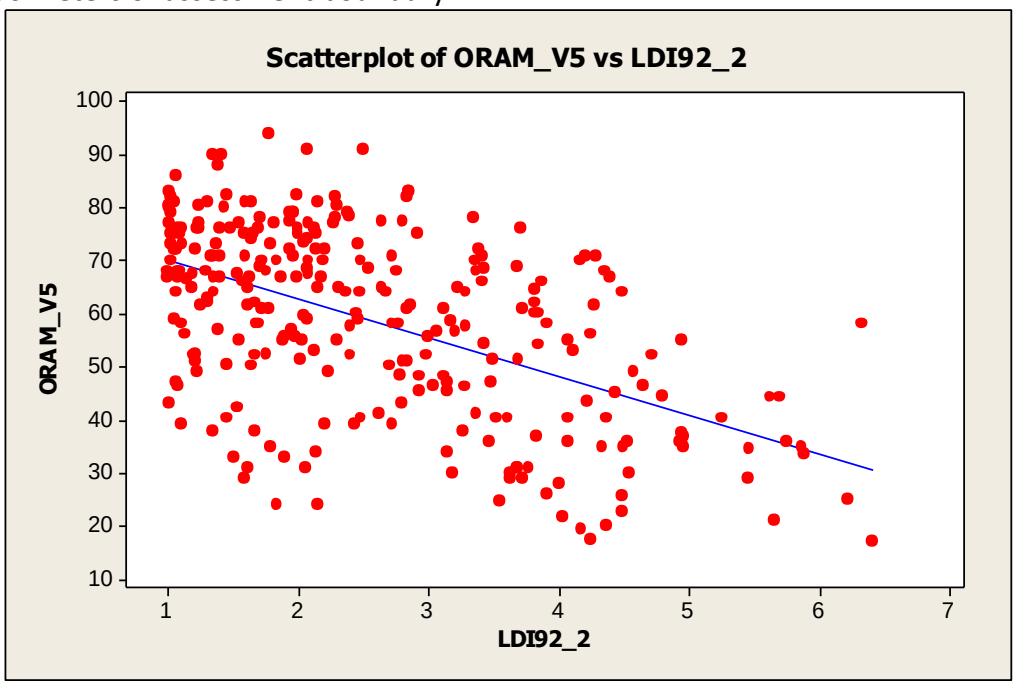

```
The regression equation is
VIBI_FQ = 47.3 + 0.189 RARE_AC_2

Predictor      Coef  SE Coef      T      P
Constant     47.265    1.508  31.34  0.000
RARE_AC_2   0.18940  0.02758   6.87  0.000

S = 23.3820   R-Sq = 13.7%   R-Sq(adj) = 13.5%

Analysis of Variance
Source            DF      SS     MS      F      P
Regression         1   25790  25790  47.17  0.000
Residual Error   296  161828    547
Total            297  187618

Unusual Observations
Obs  RARE_AC_2  VIBI_FQ     Fit  SE Fit  Residual  St Resid
 27        149    38.41   75.54    3.71    -37.13     -1.61 X
 63          0    94.68   47.27    1.51     47.41      2.03R
 76          3    96.93   47.88    1.47     49.04      2.10R
 79        154   100.00   76.39    3.83     23.61      1.02 X
 89          6    96.84   48.46    1.44     48.38      2.07R
 90        195    67.30   84.22    4.91    -16.92     -0.74 X
 94        297   100.00  103.50    7.65     -3.50     -0.16 X
 99        200    82.55   85.14    5.04     -2.59     -0.11 X
100        190    67.50   83.17    4.76    -15.67     -0.68 X
117        209    93.01   86.89    5.28      6.12      0.27 X
137        155    58.89   76.56    3.85    -17.67     -0.77 X
142        156    86.86   76.75    3.87     10.11      0.44 X
149        215    60.17   88.04    5.44    -27.87     -1.23 X
160        153    96.09   76.28    3.81     19.81      0.86 X
164        151   100.00   75.94    3.76     24.06      1.04 X
188        210    72.20   87.11    5.31    -14.92     -0.66 X
190         31     3.85   53.16    1.37    -49.31     -2.11R
195          0    96.34   47.27    1.51     49.07      2.10R
196        134    60.57   72.64    3.32    -12.06     -0.52 X
211        135    90.85   72.75    3.33     18.10      0.78 X
229        174    91.75   80.21    4.35     11.53      0.50 X
230        225    82.29   89.88    5.71     -7.59     -0.33 X
270        125    22.82   70.89    3.09    -48.07     -2.07R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A93. Scatterplot and regression analysis of ORAM score versus 1992 LDI for area within 100 meters of assessment boundary.



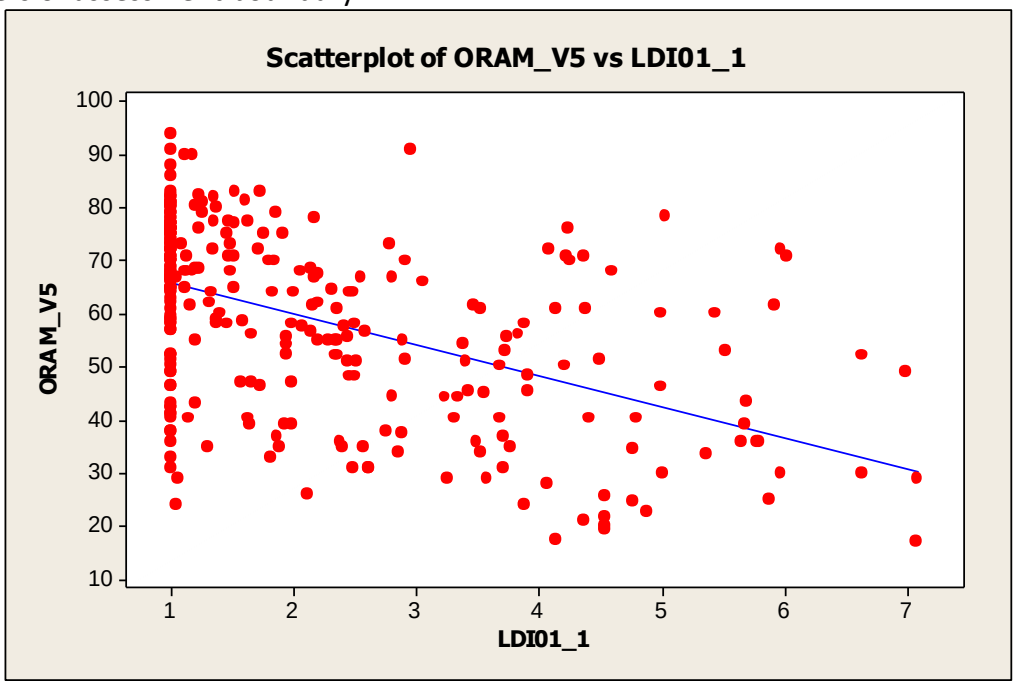

```
The regression equation is
ORAM_V5 = 75.5 - 8.67 LDI92_1

Predictor      Coef  SE Coef       T      P
Constant     75.527    1.700   44.42  0.000
LDI92_1     -8.6734   0.7614  -11.39  0.000

S = 14.4915   R-Sq = 31.0%   R-Sq(adj) = 30.7%

Analysis of Variance
Source            DF     SS     MS       F      P
Regression         1  27251  27251  129.77  0.000
Residual Error   289  60691    210
Total            290  87942

Unusual Observations
Obs  LDI92_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
 47     1.00   35.000  66.854   1.108   -31.854     -2.20R
 56     4.44   68.000  36.983   2.091    31.017      2.16RX
101     1.00   33.000  66.854   1.108   -33.854     -2.34R
118     1.45   94.000  62.934   0.925    31.066      2.15R
123     1.22   34.000  64.983   1.010   -30.983     -2.14R
133     1.24   24.000  64.759   1.000   -40.759     -2.82R
141     2.01   91.000  58.088   0.851    32.912      2.28R
144     1.86   90.000  59.410   0.851    30.590      2.11R
145     1.97   90.000  58.425   0.850    31.575      2.18R
164     3.72   76.000  43.275   1.602    32.725      2.27R
185     5.02   40.000  32.007   2.497     7.993      0.56 X
187     5.08   34.500  31.424   2.545     3.076      0.22 X
189     4.54   38.000  36.150   2.158     1.850      0.13 X
214     1.21   31.000  65.011   1.012   -34.011     -2.35R
224     5.50   36.000  27.860   2.842     8.140      0.57 X
231     1.00   33.000  66.854   1.108   -33.854     -2.34R
253     4.54   25.500  36.150   2.158   -10.650     -0.74 X
266     1.57   31.000  61.919   0.894   -30.919     -2.14R
269     4.54   21.500  36.150   2.158   -14.650     -1.02 X
270     4.48   40.000  36.645   2.118     3.355      0.23 X
271     1.32   29.000  64.062   0.969   -35.062     -2.42R
280     4.54   36.000  36.150   2.158    -0.150     -0.01 X
284     1.07   24.000  66.274   1.076   -42.274     -2.93R
287     7.16   25.000  13.437   4.068    11.563      0.83 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A94. Scatterplot and regression analysis of ORAM score versus 1992 LDI for area from 100 to 350 meters of assessment boundary.



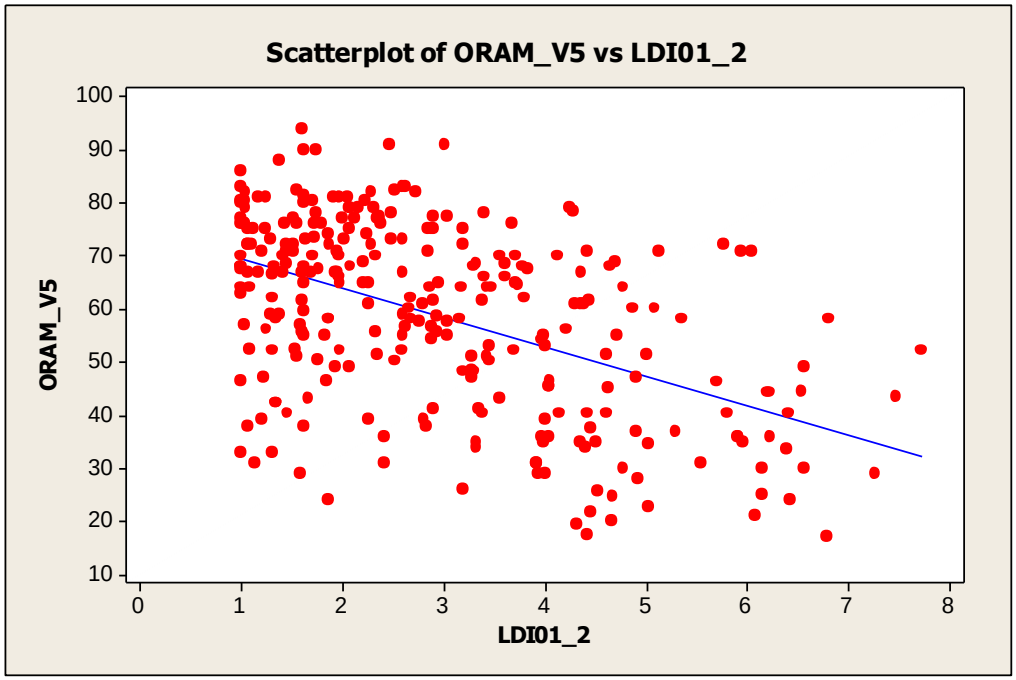

```
The regression equation is
ORAM_V5 = 77.7 - 7.35 LDI92_2

Predictor      Coef  SE Coef       T      P
Constant     77.659    1.919   40.48  0.000
LDI92_2     -7.3463   0.6667  -11.02  0.000

S = 14.6384   R-Sq = 29.6%   R-Sq(adj) = 29.3%

Analysis of Variance
Source            DF     SS     MS       F      P
Regression         1  26014  26014  121.40  0.000
Residual Error   289  61928    214
Total            290  87942

Unusual Observations
Obs  LDI92_2  ORAM_V5     Fit  SE Fit  Residual  St Resid
  3     5.88   35.000  34.490   2.363     0.510     0.04 X
 31     5.66   21.000  36.100   2.228   -15.100    -1.04 X
 47     1.78   35.000  64.546   1.006   -29.546    -2.02R
101     1.51   33.000  66.597   1.115   -33.597    -2.30R
118     1.78   94.000  64.585   1.008    29.415     2.01R
128     1.11   39.000  69.538   1.302   -30.538    -2.09R
133     2.15   24.000  61.869   0.904   -37.869    -2.59R
141     2.50   91.000  59.289   0.860    31.711     2.17R
143     6.42   17.000  30.529   2.701   -13.529    -0.94 X
187     5.47   34.500  37.481   2.113    -2.981    -0.21 X
214     1.61   31.000  65.834   1.072   -34.834    -2.39R
224     5.75   36.000  35.432   2.284     0.568     0.04 X
231     1.90   33.000  63.676   0.968   -30.676    -2.10R
232     5.45   29.000  37.604   2.102    -8.604    -0.59 X
235     6.33   58.000  31.123   2.650    26.877     1.87 X
237     5.70   44.000  35.763   2.256     8.237     0.57 X
238     5.63   44.000  36.274   2.213     7.726     0.53 X
266     2.06   31.000  62.533   0.924   -31.533    -2.16R
271     1.59   29.000  65.963   1.079   -36.963    -2.53R
279     5.89   33.500  34.388   2.372    -0.888    -0.06 X
284     1.85   24.000  64.070   0.985   -40.070    -2.74R
286     1.35   38.000  67.732   1.184   -29.732    -2.04R
287     6.22   25.000  31.941   2.580    -6.941    -0.48 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A95. Scatterplot and regression analysis of ORAM score versus 2001 LDI for area within 100 meters of assessment boundary.



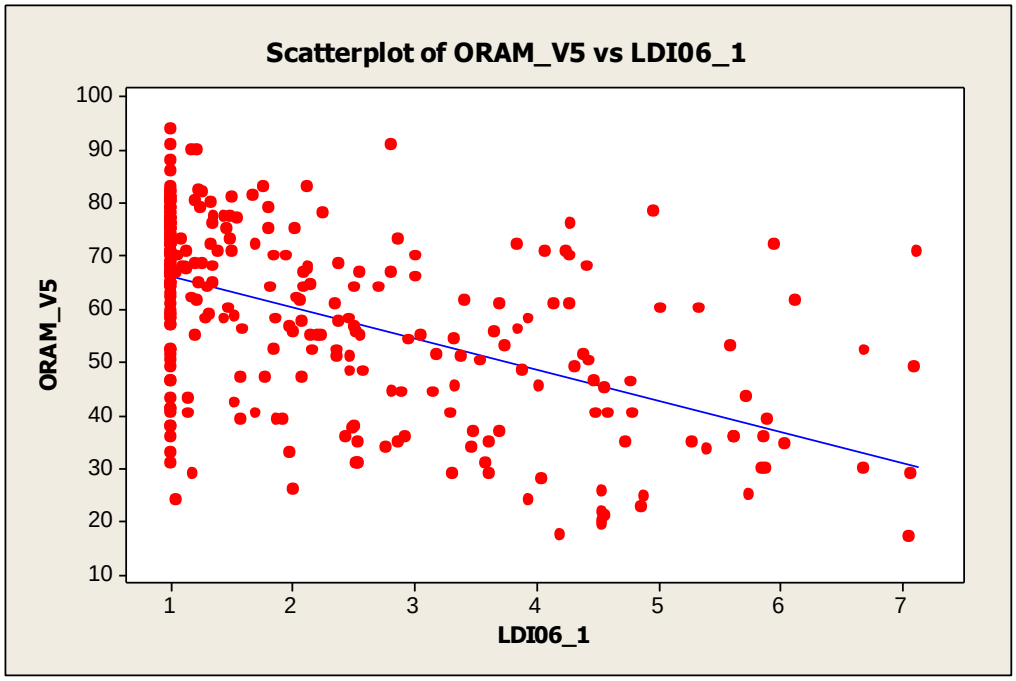

```
The regression equation is
ORAM_V5 = 71.6 - 5.82 LDI01_1

Predictor      Coef  SE Coef      T      P
Constant     71.585    1.558  45.95  0.000
LDI01_1     -5.8246   0.5829  -9.99  0.000

S = 15.0385   R-Sq = 25.7%   R-Sq(adj) = 25.4%

Analysis of Variance
Source            DF     SS     MS      F      P
Regression         1  22583  22583  99.86  0.000
Residual Error   289  65359    226
Total            290  87942

Unusual Observations
Obs  LDI01_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
  1     6.99   49.000  30.890   2.924    18.110     1.23 X
 11     6.02   71.000  36.534   2.392    34.466     2.32RX
 25     5.98   30.000  36.762   2.370    -6.762    -0.46 X
 60     5.91   61.500  37.134   2.336    24.366     1.64 X
 68     5.69   43.500  38.449   2.215     5.051     0.34 X
 82     5.78   36.000  37.924   2.263    -1.924    -0.13 X
 83     5.80   36.000  37.791   2.275    -1.791    -0.12 X
 84     2.11   26.000  59.300   0.883   -33.300    -2.22R
141     2.95   91.000  54.399   0.983    36.601     2.44R
143     7.07   17.000  30.420   2.969   -13.420    -0.91 X
153     5.68   39.000  38.484   2.211     0.516     0.03 X
159     4.14   17.500  47.483   1.431   -29.983    -2.00R
177     6.63   52.000  32.956   2.728    19.044     1.29 X
207     6.63   30.000  32.992   2.724    -2.992    -0.20 X
224     5.65   36.000  38.703   2.191    -2.703    -0.18 X
227     5.98   72.000  36.753   2.371    35.247     2.37RX
231     1.00   33.000  65.761   1.127   -32.761    -2.18R
232     7.09   29.000  30.270   2.983    -1.270    -0.09 X
259     5.04   78.500  42.216   1.875    36.284     2.43R
266     1.00   31.000  65.761   1.127   -34.761    -2.32R
271     1.07   29.000  65.379   1.103   -36.379    -2.43R
284     1.05   24.000  65.460   1.108   -41.460    -2.76R
287     5.88   25.000  37.328   2.318   -12.328    -0.83 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A96. Scatterplot and regression analysis of ORAM score versus 2001 LDI for area from 100 to 350 meters of assessment boundary.



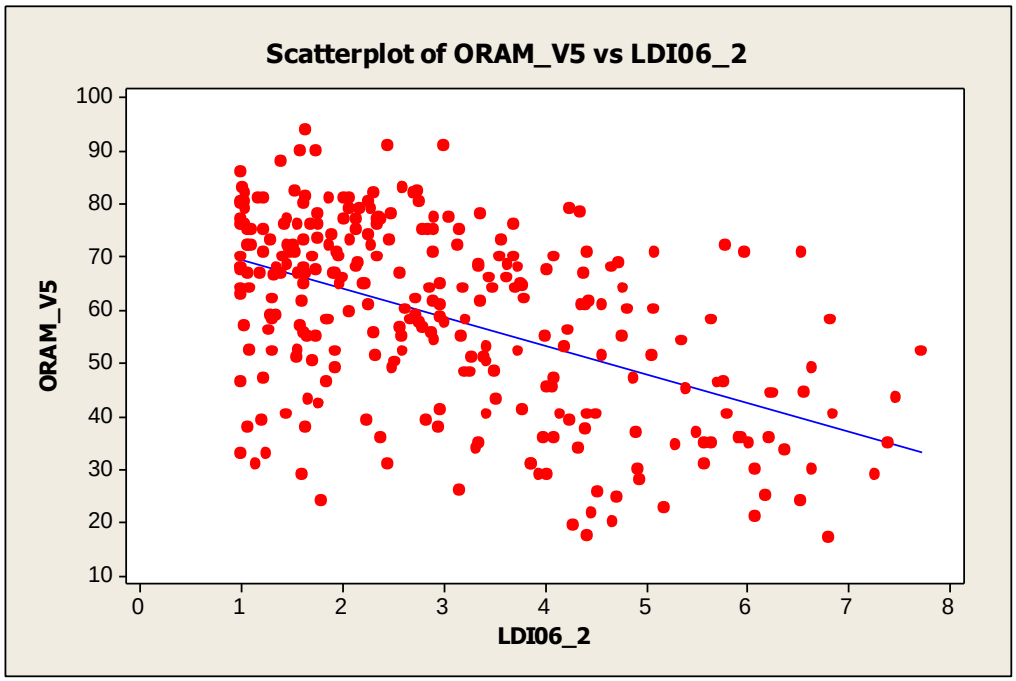

```
The regression equation is
ORAM_V5 = 75.2 - 5.57 LDI01_2

Predictor      Coef  SE Coef      T      P
Constant     75.171    1.867  40.26  0.000
LDI01_2     -5.5748   0.5587  -9.98  0.000

S = 15.0440   R-Sq = 25.6%   R-Sq(adj) = 25.4%

Analysis of Variance
Source            DF     SS     MS      F      P
Regression         1  22535  22535  99.57  0.000
Residual Error   289  65407    226
Total            290  87942

Unusual Observations
Obs  LDI01_2  ORAM_V5     Fit  SE Fit  Residual  St Resid
  1     6.57   49.000  38.541   2.209    10.459     0.70 X
 68     7.48   43.500  33.474   2.682    10.026     0.68 X
 84     3.20   26.000  57.348   0.893   -31.348    -2.09R
101     1.31   33.000  67.883   1.271   -34.883    -2.33R
130     4.33   19.500  51.052   1.172   -31.552    -2.10R
141     3.02   91.000  58.349   0.883    32.651     2.17R
143     6.79   17.000  37.323   2.321   -20.323    -1.37 X
159     4.42   17.500  50.542   1.206   -33.042    -2.20R
177     7.71   52.000  32.176   2.805    19.824     1.34 X
207     6.57   30.000  38.545   2.209    -8.545    -0.57 X
214     2.41   31.000  61.713   0.931   -30.713    -2.05R
231     1.00   33.000  69.596   1.400   -36.596    -2.44R
232     7.27   29.000  34.656   2.571    -5.656    -0.38 X
235     6.80   58.000  37.278   2.326    20.722     1.39 X
263     6.55   44.500  38.673   2.197     5.827     0.39 X
266     1.14   31.000  68.802   1.339   -37.802    -2.52R
271     1.59   29.000  66.282   1.161   -37.282    -2.49R
284     1.86   24.000  64.796   1.070   -40.796    -2.72R
286     1.08   38.000  69.146   1.365   -31.146    -2.08R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A97. Scatterplot and regression analysis of ORAM score versus 2006 LDI for area within 100 meters of assessment boundary.



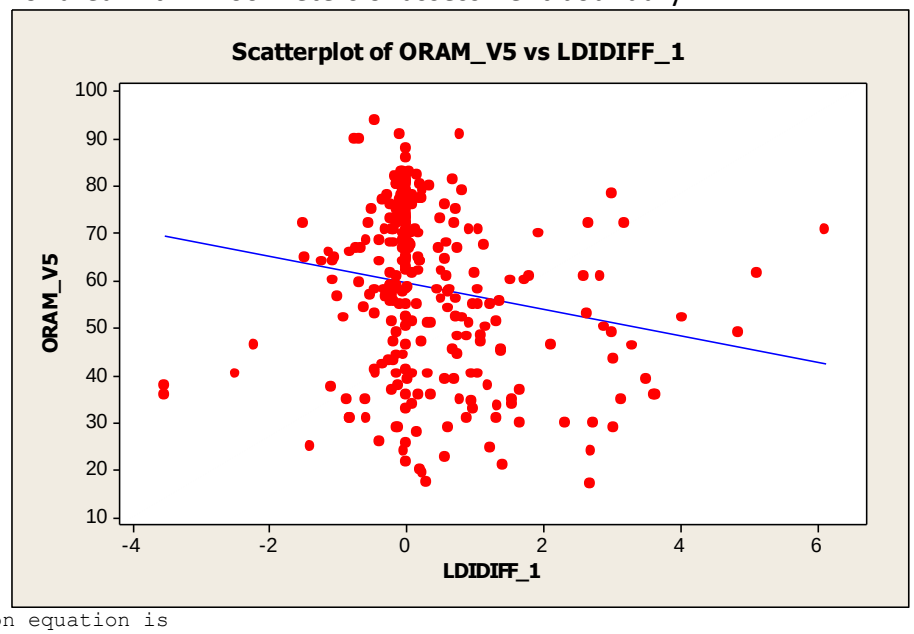

```
The regression equation is
ORAM_V5 = 72.1 - 5.87 LDI06_1

Predictor      Coef  SE Coef       T      P
Constant     72.108    1.527   47.21  0.000
LDI06_1     -5.8731   0.5528  -10.62  0.000

S = 14.7931   R-Sq = 28.1%   R-Sq(adj) = 27.8%

Analysis of Variance
Source            DF     SS     MS       F      P
Regression         1  24699  24699  112.87  0.000
Residual Error   289  63243    219
Total            290  87942

Unusual Observations
Obs  LDI06_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
  1     7.09   49.000  30.445   2.802    18.555     1.28 X
 11     7.13   71.000  30.215   2.823    40.785     2.81RX
 25     5.86   30.000  37.705   2.162    -7.705    -0.53 X
 60     6.12   61.500  36.142   2.298    25.358     1.74 X
 84     2.01   26.000  60.297   0.879   -34.297    -2.32R
141     2.81   91.000  55.628   0.916    35.372     2.40R
143     7.06   17.000  30.640   2.784   -13.640    -0.94 X
153     5.89   39.000  37.492   2.181     1.508     0.10 X
159     4.21   17.500  47.408   1.375   -29.908    -2.03R
177     6.70   52.000  32.780   2.594    19.220     1.32 X
187     6.05   34.500  36.604   2.258    -2.104    -0.14 X
190     5.88   30.000  37.595   2.172    -7.595    -0.52 X
207     6.68   30.000  32.855   2.587    -2.855    -0.20 X
224     5.86   36.000  37.670   2.166    -1.670    -0.11 X
227     5.96   72.000  37.127   2.212    34.873     2.38RX
231     1.00   33.000  66.235   1.117   -33.235    -2.25R
232     7.07   29.000  30.614   2.787    -1.614    -0.11 X
259     4.96   78.500  42.993   1.718    35.507     2.42R
266     1.00   31.000  66.235   1.117   -35.235    -2.39R
271     1.19   29.000  65.141   1.055   -36.141    -2.45R
280     1.00   36.000  66.235   1.117   -30.235    -2.05R
284     1.05   24.000  65.937   1.100   -41.937    -2.84R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A98. Scatterplot and regression analysis of ORAM score versus 2006 LDI for area from 100 to 350 meters of assessment boundary.



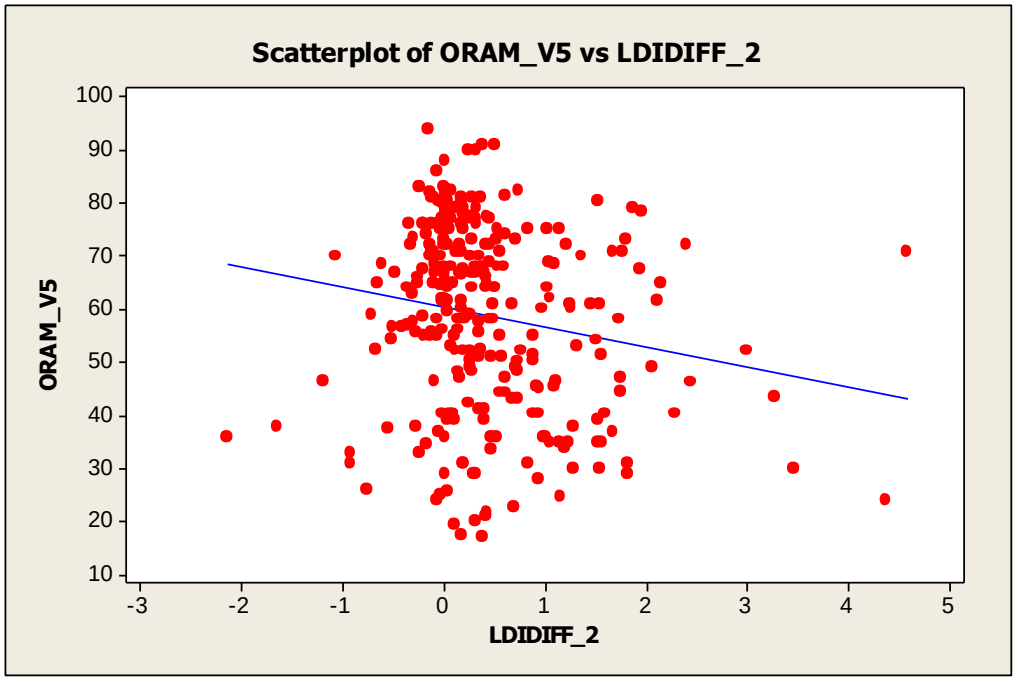

```
The regression equation is
ORAM_V5 = 75.1 - 5.43 LDI06_2

Predictor      Coef  SE Coef       T      P
Constant     75.099    1.838   40.86  0.000
LDI06_2     -5.4282   0.5360  -10.13  0.000

S = 14.9864   R-Sq = 26.2%   R-Sq(adj) = 25.9%

Analysis of Variance
Source            DF     SS     MS       F      P
Regression         1  23035  23035  102.56  0.000
Residual Error   289  64907    225
Total            290  87942

Unusual Observations
Obs  LDI06_2  ORAM_V5     Fit  SE Fit  Residual  St Resid
  3     7.40   35.000  34.953   2.509     0.047     0.00 X
 11     6.54   71.000  39.605   2.085    31.395     2.12R
 68     7.48   43.500  34.470   2.553     9.030     0.61 X
 84     3.16   26.000  57.966   0.882   -31.966    -2.14R
101     1.26   33.000  68.232   1.284   -35.232    -2.36R
130     4.29   19.500  51.806   1.114   -32.306    -2.16R
141     3.01   91.000  58.755   0.879    32.245     2.16R
143     6.80   17.000  38.171   2.214   -21.171    -1.43 X
159     4.42   17.500  51.104   1.158   -33.604    -2.25R
177     7.72   52.000  33.192   2.672    18.808     1.28 X
185     6.86   40.000  37.885   2.240     2.115     0.14 X
214     2.45   31.000  61.786   0.928   -30.786    -2.06R
231     1.00   33.000  69.671   1.391   -36.671    -2.46R
232     7.28   29.000  35.590   2.450    -6.590    -0.45 X
235     6.83   58.000  38.036   2.226    19.964     1.35 X
266     1.16   31.000  68.807   1.326   -37.807    -2.53R
271     1.61   29.000  66.351   1.155   -37.351    -2.50R
284     1.79   24.000  65.357   1.094   -41.357    -2.77R
286     1.08   38.000  69.236   1.358   -31.236    -2.09R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A99. Scatterplot and regression analysis of ORAM score versus difference between 2006 and 1992 LDI for area within 100 meters of assessment boundary.



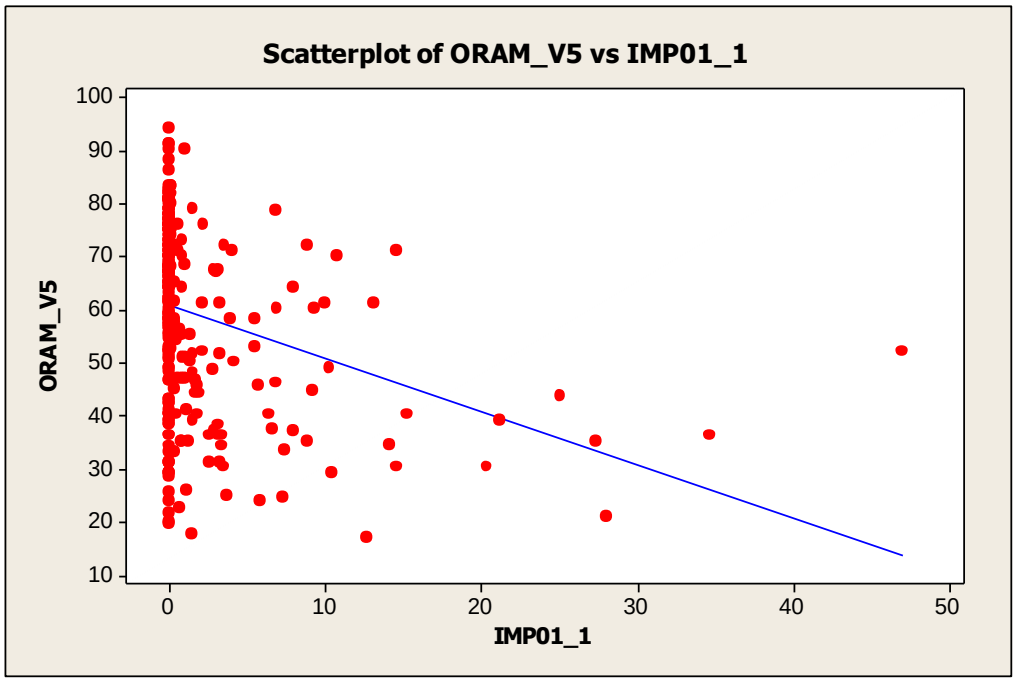

```
The regression equation is
ORAM_V5 = 59.7 - 2.81 LDIDIFF_1

Predictor      Coef  SE Coef      T      P
Constant     59.706    1.049  56.93  0.000
LDIDIFF_1   -2.8087   0.8811  -3.19  0.002

S = 17.1453   R-Sq = 3.4%   R-Sq(adj) = 3.1%

Analysis of Variance
Source            DF       SS      MS      F      P
Regression         1   2987.2  2987.2  10.16  0.002
Residual Error   289  84955.0   294.0
Total            290  87942.2

Unusual Observations
Obs  LDIDIFF_1  ORAM_V5    Fit  SE Fit  Residual  St Resid
  1       4.84    49.00  46.12    4.09      2.88     0.17 X
  3       3.13    35.00  50.92    2.65    -15.92    -0.94 X
 11       6.13    71.00  42.48    5.20     28.52     1.75 X
 31       1.40    21.00  55.77    1.37    -34.77    -2.03R
 33       3.00    49.00  51.29    2.55     -2.29    -0.13 X
 55       2.89    50.00  51.58    2.46     -1.58    -0.09 X
 58       0.56    22.50  58.13    1.02    -35.63    -2.08R
 60       5.12    61.50  45.31    4.33     16.19     0.98 X
 68       3.03    43.50  51.21    2.57     -7.71    -0.45 X
 82       3.62    36.00  49.54    3.06    -13.54    -0.80 X
 83       3.64    36.00  49.49    3.08    -13.49    -0.80 X
 84      -0.38    26.00  60.78    1.19    -34.78    -2.03R
107      -2.49    40.00  66.70    2.69    -26.70    -1.58 X
130       0.25    19.50  59.00    1.01    -39.50    -2.31R
143       2.68    17.00  52.18    2.29    -35.18    -2.07R
153       3.50    39.00  49.88    2.96    -10.88    -0.64 X
159       0.29    17.50  58.88    1.01    -41.38    -2.42R
177       4.02    52.00  48.42    3.39      3.58     0.21 X
189      -3.54    38.00  69.65    3.56    -31.65    -1.89 X
201       3.30    46.00  50.43    2.80     -4.43    -0.26 X
227       3.18    72.00  50.78    2.70     21.22     1.25 X
232       3.03    29.00  51.21    2.57    -22.21    -1.31 X
250      -2.22    46.50  65.95    2.47    -19.45    -1.15 X
258       0.20    20.00  59.15    1.01    -39.15    -2.29R
259       3.00    78.50  51.29    2.55     27.21     1.61 X
269       0.00    21.50  59.71    1.05    -38.21    -2.23R
280      -3.54    36.00  69.65    3.56    -33.65    -2.01RX
284      -0.02    24.00  59.75    1.05    -35.75    -2.09R
287      -1.40    25.00  63.64    1.83    -38.64    -2.27R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A100. Scatterplot and regression analysis of ORAM score versus difference between 2006 and 1992 LDI for area from 100 to 350 meters of assessment boundary.



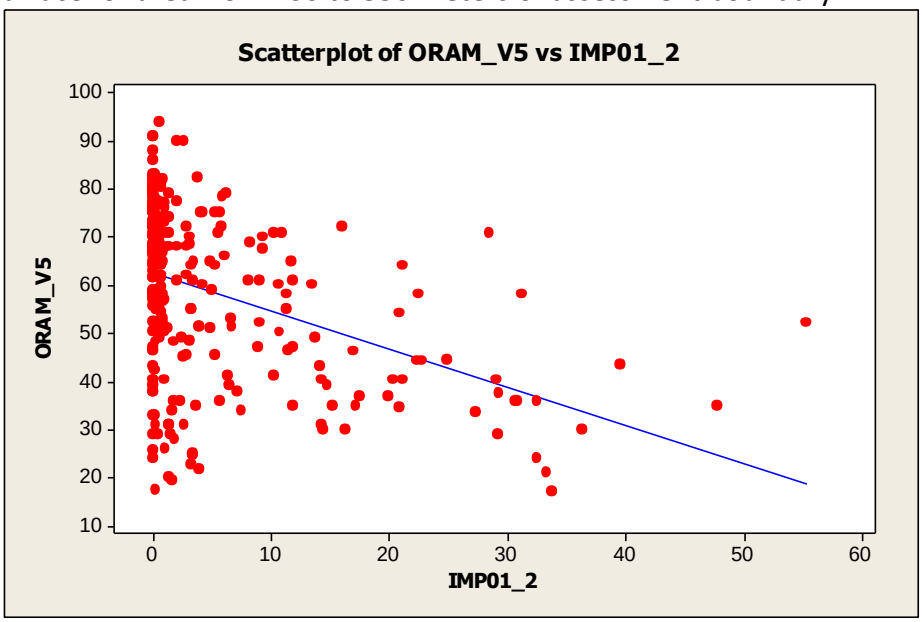

```
The regression equation is
ORAM_V5 = 60.4 - 3.81 LDIDIFF_2

Predictor    Coef  SE Coef      T      P
Constant   60.419    1.149  52.58  0.000
LDIDIFF_2  -3.811    1.265  -3.01  0.003

S = 17.1766   R-Sq = 3.0%   R-Sq(adj) = 2.7%

Analysis of Variance
Source            DF       SS      MS     F      P
Regression         1   2677.2  2677.2  9.07  0.003
Residual Error   289  85265.0   295.0
Total            290  87942.2

Unusual Observations
Obs  LDIDIFF_2  ORAM_V5    Fit  SE Fit  Residual  St Resid
 11       4.58    71.00  42.96    5.34     28.04     1.72 X
 31       0.42    21.00  58.81    1.01    -37.81    -2.21R
 58       0.69    22.50  57.78    1.06    -35.28    -2.06R
 68       3.27    43.50  47.96    3.72     -4.46    -0.27 X
 84      -0.75    26.00  63.29    1.81    -37.29    -2.18R
130       0.11    19.50  60.00    1.09    -40.50    -2.36R
133       4.38    24.00  43.73    5.09    -19.73    -1.20 X
143       0.39    17.00  58.94    1.01    -41.94    -2.45R
159       0.18    17.50  59.74    1.06    -42.24    -2.46R
177       3.00    52.00  48.98    3.40      3.02     0.18 X
189      -1.63    38.00  66.63    2.80    -28.63    -1.69 X
200       2.40    72.00  51.27    2.68     20.73     1.22 X
201       2.43    46.00  51.15    2.72     -5.15    -0.30 X
207       3.46    30.00  47.25    3.95    -17.25    -1.03 X
216       2.29    40.00  51.70    2.55    -11.70    -0.69 X
253       0.04    25.50  60.28    1.13    -34.78    -2.03R
258       0.32    20.00  59.20    1.02    -39.20    -2.29R
269       0.43    21.50  58.77    1.01    -37.27    -2.17R
280      -2.14    36.00  68.58    3.41    -32.58    -1.94 X
284      -0.06    24.00  60.63    1.18    -36.63    -2.14R
287      -0.03    25.00  60.54    1.17    -35.54    -2.07R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A101. Scatterplot and regression analysis of ORAM score versus 2001 percent impervious surface for area within 100 meters of assessment boundary.



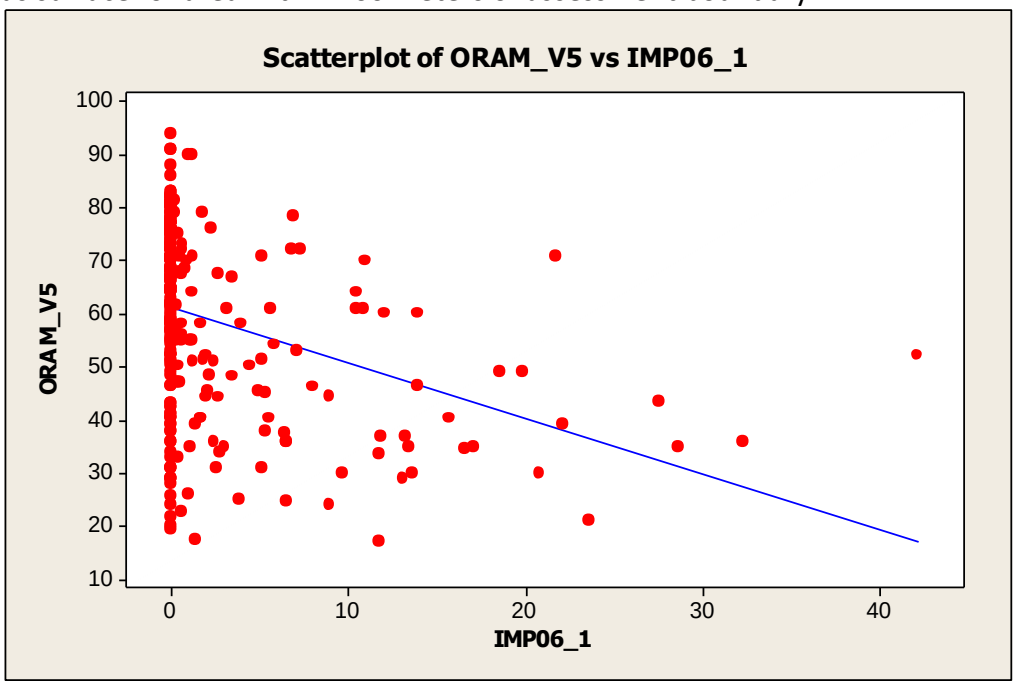

```
The regression equation is
ORAM_V5 = 60.7 - 1.00 IMP01_1

Predictor      Coef  SE Coef      T      P
Constant     60.705    1.038  58.47  0.000
IMP01_1     -1.0006   0.1840  -5.44  0.000

S = 16.6147   R-Sq = 9.3%   R-Sq(adj) = 9.0%

Analysis of Variance
Source            DF       SS      MS      F      P
Regression         1   8164.1  8164.1  29.57  0.000
Residual Error   289  79778.1   276.0
Total            290  87942.2

Unusual Observations
Obs  IMP01_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
  3     27.4   35.000  33.285   4.783     1.715     0.11 X
 11     14.6   71.000  46.144   2.515    24.856     1.51 X
 25     14.5   30.000  46.160   2.512   -16.160    -0.98 X
 31     28.1   21.000  32.629   4.901   -11.629    -0.73 X
 58      0.7   22.500  60.031   1.002   -37.531    -2.26R
 68     25.2   43.500  35.534   4.379     7.966     0.50 X
 84      1.1   26.000  59.580   0.986   -33.580    -2.02R
118      0.0   94.000  60.705   1.038    33.295     2.01R
130      0.0   19.500  60.705   1.038   -41.205    -2.48R
153     21.3   39.000  39.443   3.681    -0.443    -0.03 X
159      1.5   17.500  59.215   0.978   -41.715    -2.52R
177     47.0   52.000  13.720   8.337    38.280     2.66RX
187     14.1   34.500  46.614   2.435   -12.114    -0.74 X
207     20.5   30.000  40.229   3.542   -10.229    -0.63 X
216     15.2   40.000  45.477   2.628    -5.477    -0.33 X
224     34.7   36.000  26.019   6.097     9.981     0.65 X
253      0.0   25.500  60.705   1.038   -35.205    -2.12R
258      0.0   20.000  60.705   1.038   -40.705    -2.45R
269      0.0   21.500  60.705   1.038   -39.205    -2.36R
284      0.0   24.000  60.705   1.038   -36.705    -2.21R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A102. Scatterplot and regression analysis of ORAM score versus 2001 percent impervious surface for area from 100 to 350 meters of assessment boundary.




```
The regression equation is
ORAM_V5 = 62.7 - 0.795 IMP01_2

Predictor      Coef  SE Coef      T      P
Constant     62.697    1.066  58.79  0.000
IMP01_2     -0.7949   0.1041  -7.63  0.000

S = 15.9131   R-Sq = 16.8%   R-Sq(adj) = 16.5%

Analysis of Variance
Source           DF     SS     MS      F      P
Regression        1  14759  14759  58.28  0.000
Residual Error  289  73183    253
Total           290  87942

Unusual Observations
Obs  IMP01_2  ORAM_V5     Fit  SE Fit  Residual  St Resid
  3     47.8   35.000  24.699   4.557    10.301      0.68 X
 11     28.6   71.000  39.956   2.633    31.044      1.98 X
 21      3.4   24.500  59.981   0.947   -35.481     -2.23R
 31     33.4   21.000  36.139   3.105   -15.139     -0.97 X
 36      1.9   28.000  61.170   0.985   -33.170     -2.09R
 58      3.3   22.500  60.103   0.950   -37.603     -2.37R
 67     29.3   37.500  39.388   2.702    -1.888     -0.12 X
 68     39.6   43.500  31.252   3.721    12.248      0.79 X
 82     30.8   36.000  38.253   2.842    -2.253     -0.14 X
 83     30.8   36.000  38.231   2.845    -2.231     -0.14 X
 84      1.1   26.000  61.817   1.016   -35.817     -2.26R
116      1.6   29.000  61.456   0.998   -32.456     -2.04R
118      0.6   94.000  62.222   1.038    31.778      2.00R
130      1.7   19.500  61.371   0.994   -41.871     -2.64R
133     32.6   24.000  36.760   3.028   -12.760     -0.82 X
143     33.8   17.000  35.864   3.140   -18.864     -1.21 X
159      0.4   17.500  62.406   1.049   -44.906     -2.83R
177     55.3   52.000  18.717   5.326    33.283      2.22RX
185     29.2   40.000  39.517   2.687     0.483      0.03 X
206      0.5   29.000  62.328   1.044   -33.328     -2.10R
207     36.4   30.000  33.797   3.399    -3.797     -0.24 X
224     32.5   36.000  36.838   3.018    -0.838     -0.05 X
232     29.2   29.000  39.492   2.690   -10.492     -0.67 X
235     31.2   58.000  37.895   2.887    20.105      1.28 X
253      0.0   25.500  62.697   1.066   -37.197     -2.34R
258      1.4   20.000  61.606   1.005   -41.606     -2.62R
269      3.9   21.500  59.610   0.940   -38.110     -2.40R
271      0.1   29.000  62.624   1.062   -33.624     -2.12R
279     27.3   33.500  41.004   2.505    -7.504     -0.48 X
284      0.0   24.000  62.690   1.066   -38.690     -2.44R
287      3.5   25.000  59.943   0.946   -34.943     -2.20R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A103. Scatterplot and regression analysis of ORAM score versus 2006 percent impervious surface for area within 100 meters of assessment boundary.




```
The regression equation is
ORAM_V5 = 61.3 - 1.05 IMP06_1

Predictor      Coef  SE Coef      T      P
Constant     61.285    1.043  58.74  0.000
IMP06_1     -1.0466   0.1684  -6.22  0.000

S = 16.3833   R-Sq = 11.8%   R-Sq(adj) = 11.5%
```

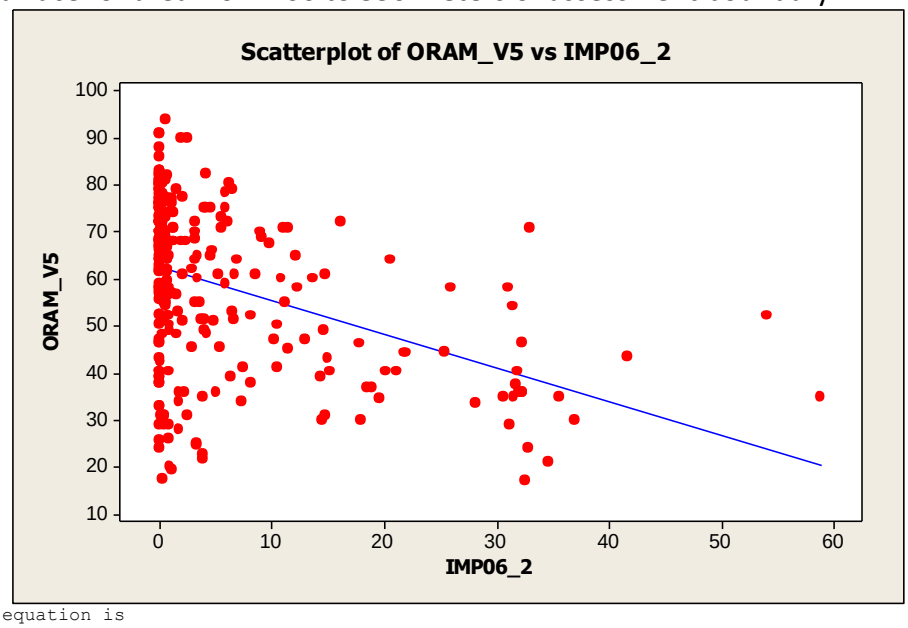
Analysis of Variance

```
Source            DF     SS     MS      F      P
Regression         1  10371  10371  38.64  0.000
Residual Error   289  77571    268
Total            290  87942
```

Unusual Observations

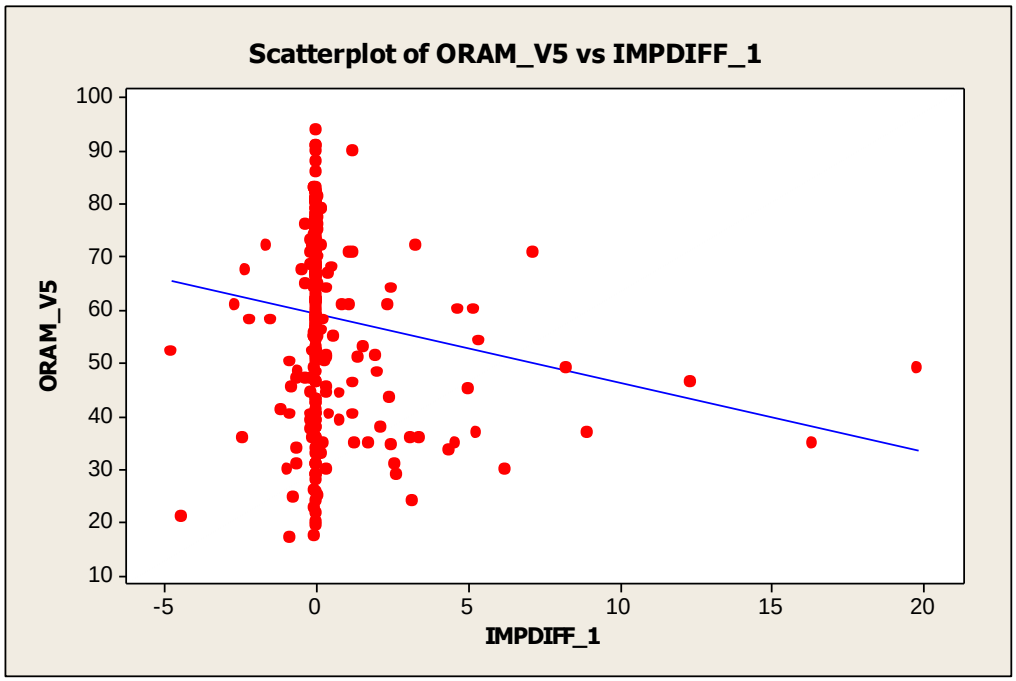
```
Obs  IMP06_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
  1     18.6   49.000  41.813   2.889     7.187     0.45 X
  3     28.7   35.000  31.289   4.521     3.711     0.24 X
 11     21.7   71.000  38.565   3.386    32.435     2.02RX
 31     23.6   21.000  36.572   3.695   -15.572    -0.98 X
 33     19.8   49.000  40.524   3.086     8.476     0.53 X
 36      0.0   28.000  61.285   1.043   -33.285    -2.04R
 58      0.6   22.500  60.608   1.006   -38.108    -2.33R
 68     27.6   43.500  32.420   4.344    11.080     0.70 X
 84      1.1   26.000  60.174   0.987   -34.174    -2.09R
118      0.0   94.000  61.285   1.043    32.715     2.00R
130      0.0   19.500  61.285   1.043   -41.785    -2.56R
153     22.1   39.000  38.171   3.447     0.829     0.05 X
159      1.5   17.500  59.764   0.974   -42.264    -2.58R
177     42.2   52.000  17.146   6.762    34.854     2.34RX
187     16.6   34.500  43.911   2.573    -9.411    -0.58 X
207     20.8   30.000  39.520   3.239    -9.520    -0.59 X
216     15.7   40.000  44.860   2.432    -4.860    -0.30 X
222     17.1   35.000  43.356   2.656    -8.356    -0.52 X
224     32.3   36.000  27.532   5.113     8.468     0.54 X
253      0.0   25.500  61.285   1.043   -35.785    -2.19R
258      0.0   20.000  61.285   1.043   -41.285    -2.53R
269      0.0   21.500  61.285   1.043   -39.785    -2.43R
284      0.0   24.000  61.285   1.043   -37.285    -2.28R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A104. Scatterplot and regression analysis of ORAM score versus 2006 percent impervious surface for area from 100 to 350 meters of assessment boundary.



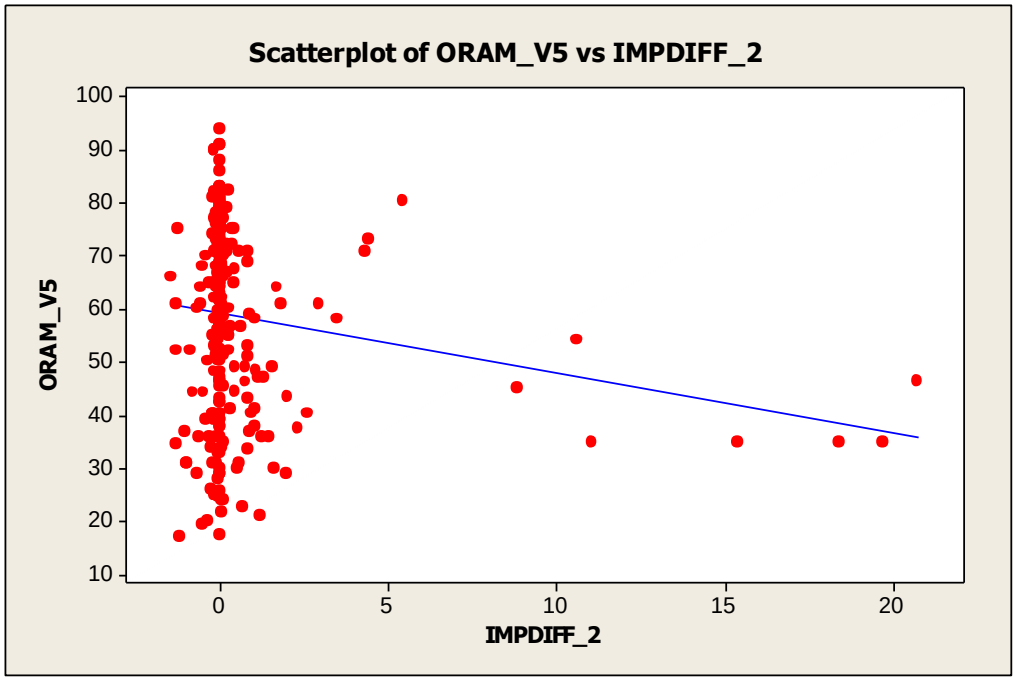

```
The regression equation is
ORAM_V5 = 62.7 - 0.720 IMP06_2

Predictor       Coef  SE Coef      T      P
Constant      62.696    1.065  58.85  0.000
IMP06_2     -0.72010  0.09406  -7.66  0.000

S = 15.9057   R-Sq = 16.9%   R-Sq(adj) = 16.6%

Analysis of Variance
Source           DF     SS     MS      F      P
Regression        1  14827  14827  58.61  0.000
Residual Error  289  73115    253
Total           290  87942

Unusual Observations
Obs  IMP06_2  ORAM_V5     Fit  SE Fit  Residual  St Resid
  3     58.9   35.000  20.284   5.110    14.716     0.98 X
 11     32.9   71.000  38.970   2.747    32.030     2.04RX
 21      3.4   24.500  60.277   0.953   -35.777    -2.25R
 31     34.6   21.000  37.777   2.894   -16.777    -1.07 X
 36      1.9   28.000  61.329   0.991   -33.329    -2.10R
 58      4.0   22.500  59.845   0.943   -37.345    -2.35R
 67     31.7   37.500  39.893   2.634    -2.393    -0.15 X
 68     41.6   43.500  32.721   3.526    10.779     0.69 X
 82     32.2   36.000  39.475   2.685    -3.475    -0.22 X
 83     32.1   36.000  39.610   2.668    -3.610    -0.23 X
 84      0.9   26.000  62.058   1.028   -36.058    -2.27R
 97     31.5   54.000  40.016   2.619    13.984     0.89 X
116      0.9   29.000  62.042   1.027   -33.042    -2.08R
130      1.2   19.500  61.856   1.017   -42.356    -2.67R
133     32.8   24.000  39.105   2.730   -15.105    -0.96 X
143     32.6   17.000  39.247   2.713   -22.247    -1.42 X
148     32.2   46.500  39.474   2.685     7.026     0.45 X
159      0.4   17.500  62.422   1.048   -44.922    -2.83R
177     54.1   52.000  23.765   4.664    28.235     1.86 X
185     31.8   40.000  39.797   2.646     0.203     0.01 X
206      0.5   29.000  62.356   1.045   -33.356    -2.10R
207     36.9   30.000  36.127   3.099    -6.127    -0.39 X
221     30.6   35.000  40.627   2.544    -5.627    -0.36 X
222     31.6   35.000  39.951   2.627    -4.951    -0.32 X
223     35.6   35.000  37.075   2.981    -2.075    -0.13 X
224     32.2   36.000  39.488   2.683    -3.488    -0.22 X
232     31.2   29.000  40.229   2.593   -11.229    -0.72 X
235     31.1   58.000  40.325   2.581    17.675     1.13 X
253      0.0   25.500  62.696   1.065   -37.196    -2.34R
258      1.0   20.000  61.969   1.023   -41.969    -2.64R
269      4.0   21.500  59.848   0.943   -38.348    -2.42R
271      0.1   29.000  62.631   1.061   -33.631    -2.12R
279     28.1   33.500  42.447   2.325    -8.947    -0.57 X
284      0.1   24.000  62.649   1.062   -38.649    -2.44R
287      3.3   25.000  60.289   0.954   -35.289    -2.22R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A105. Scatterplot and regression analysis of ORAM score versus difference between 2006 and 2001 percent impervious surface for area within 100 meters of assessment boundary.



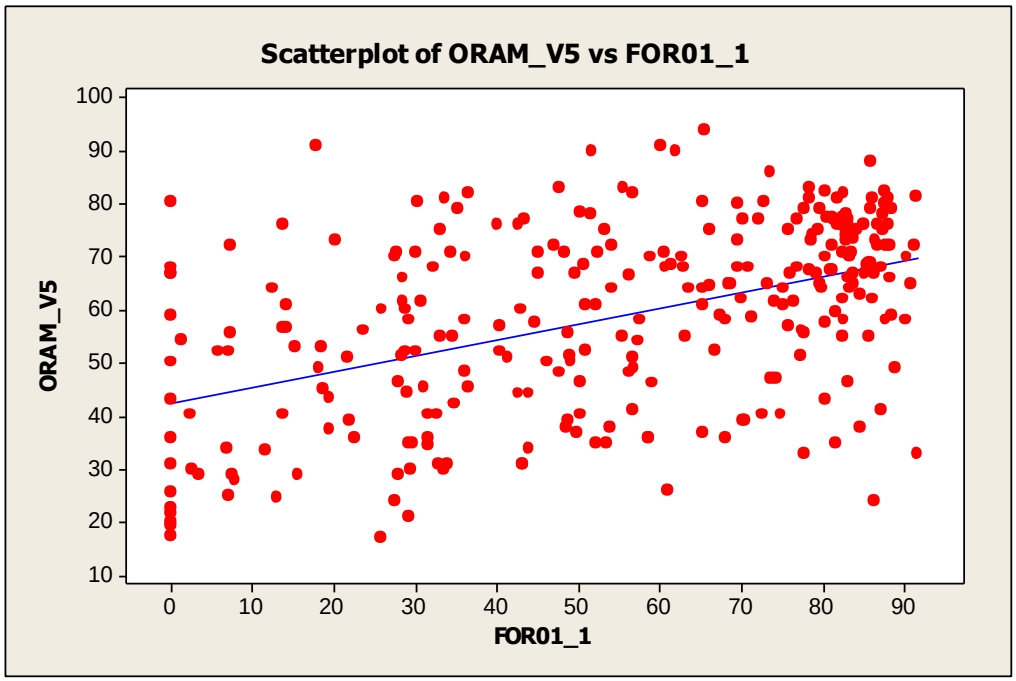

```
The regression equation is
ORAM_V5 = 59.4 - 1.30 IMPDIFF_1

Predictor      Coef  SE Coef      T      P
Constant     59.357    1.033  57.47  0.000
IMPDIFF_1   -1.2953   0.4685  -2.76  0.006

S = 17.2179   R-Sq = 2.6%   R-Sq(adj) = 2.2%

Analysis of Variance
Source            DF       SS      MS     F      P
Regression         1   2266.3  2266.3  7.64  0.006
Residual Error   289  85675.9   296.5
Total            290  87942.2

Unusual Observations
Obs  IMPDIFF_1  ORAM_V5    Fit  SE Fit  Residual  St Resid
  1        8.3    49.00  48.66    3.79      0.34      0.02 X
 11        7.2    71.00  50.09    3.29     20.91      1.24 X
 21       -0.8    24.50  60.34    1.16    -35.84     -2.09R
 31       -4.4    21.00  65.12    2.51    -44.12     -2.59RX
 33       19.8    49.00  33.66    9.13     15.34      1.05 X
 57        8.9    37.00  47.78    4.09    -10.78     -0.64 X
 58       -0.0    22.50  59.39    1.04    -36.89     -2.15R
 97        5.4    54.00  52.38    2.51      1.62      0.09 X
118        0.0    94.00  59.36    1.03     34.64      2.02R
130        0.0    19.50  59.36    1.03    -39.86     -2.32R
143       -0.9    17.00  60.49    1.19    -43.49     -2.53R
148       12.3    46.50  43.39    5.65      3.11      0.19 X
159       -0.0    17.50  59.40    1.04    -41.90     -2.44R
177       -4.8    52.00  65.56    2.66    -13.56     -0.80 X
190        6.2    30.00  51.32    2.87    -21.32     -1.26 X
222       16.3    35.00  38.18    7.51     -3.18     -0.21 X
236        5.3    37.00  52.51    2.47    -15.51     -0.91 X
258        0.0    20.00  59.36    1.03    -39.36     -2.29R
269        0.0    21.50  59.36    1.03    -37.86     -2.20R
284        0.0    24.00  59.36    1.03    -35.36     -2.06R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A106. Scatterplot and regression analysis of ORAM score versus difference between 2006 and 2001 percent impervious surface for area from 100 to 350 meters of assessment boundary.



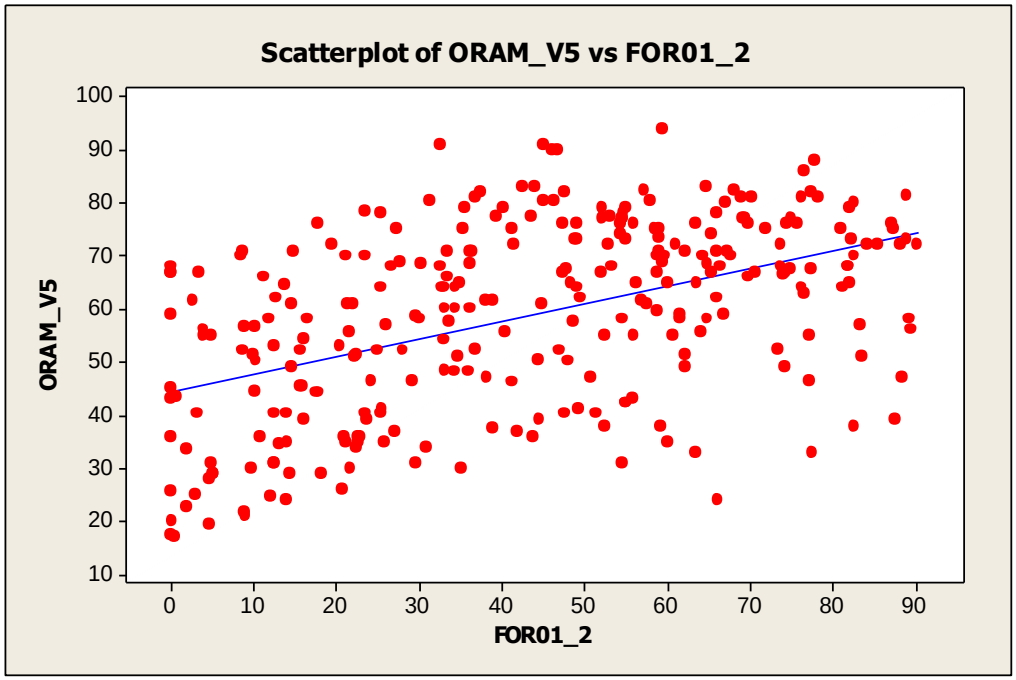

```
The regression equation is
ORAM_V5 = 59.3 - 1.13 IMPDIFF_2

Predictor      Coef  SE Coef      T      P
Constant     59.329    1.031  57.57  0.000
IMPDIFF_2   -1.1269   0.4064  -2.77  0.006

S = 17.2166   R-Sq = 2.6%   R-Sq(adj) = 2.3%

Analysis of Variance
Source            DF       SS      MS     F      P
Regression         1   2279.0  2279.0  7.69  0.006
Residual Error   289  85663.2   296.4
Total            290  87942.2

Unusual Observations
Obs  IMPDIFF_2  ORAM_V5    Fit  SE Fit  Residual  St Resid
  3       11.1    35.00  46.83    4.42    -11.83    -0.71 X
 21       -0.1    24.50  59.39    1.04    -34.89    -2.03R
 31        1.2    21.00  57.99    1.05    -36.99    -2.15R
 58        0.7    22.50  58.55    1.01    -36.05    -2.10R
 97       10.6    54.00  47.37    4.23      6.63     0.40 X
118       -0.0    94.00  59.33    1.03     34.67     2.02R
130       -0.5    19.50  59.90    1.09    -40.40    -2.35R
133        0.1    24.00  59.18    1.02    -35.18    -2.05R
143       -1.2    17.00  60.68    1.23    -43.68    -2.54R
148       20.8    46.50  35.94    8.29     10.56     0.70 X
154        8.8    45.00  49.37    3.53     -4.37    -0.26 X
159        0.0    17.50  59.31    1.03    -41.81    -2.43R
221       15.4    35.00  42.00    6.12     -7.00    -0.44 X
222       19.7    35.00  37.14    7.86     -2.14    -0.14 X
223       18.4    35.00  38.62    7.33     -3.62    -0.23 X
258       -0.4    20.00  59.74    1.07    -39.74    -2.31R
269        0.1    21.50  59.25    1.03    -37.75    -2.20R
284        0.1    24.00  59.27    1.03    -35.27    -2.05R
287       -0.1    25.00  59.47    1.04    -34.47    -2.01R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A107. Scatterplot and regression analysis of ORAM score versus 2001 percent forest canopy for area within 100 meters of assessment boundary.



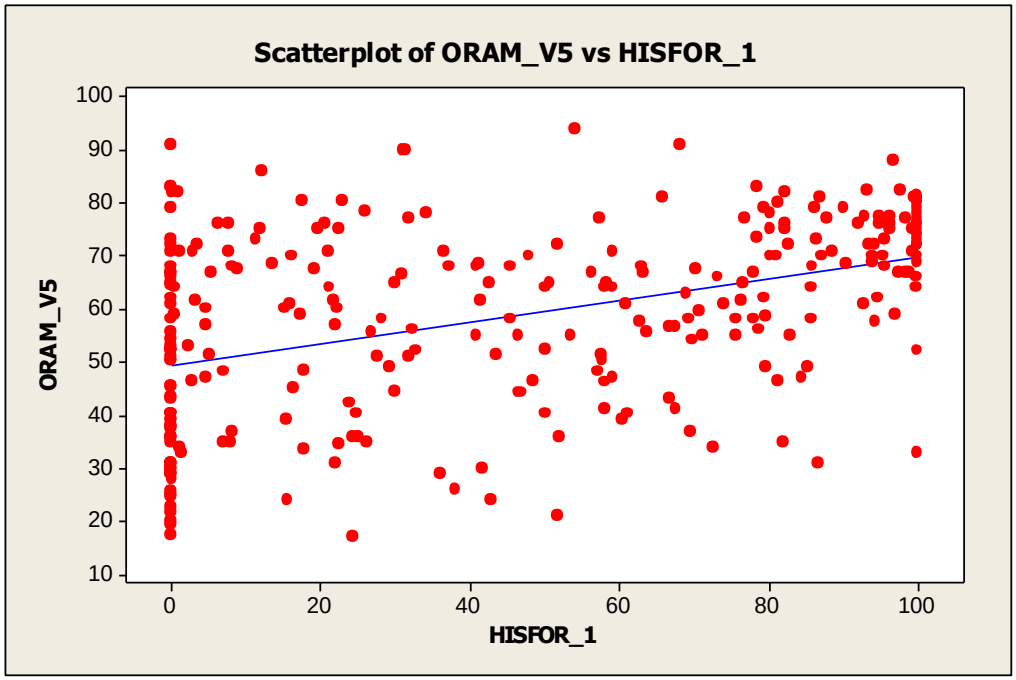

```
The regression equation is
ORAM_V5 = 42.6 + 0.297 FOR01_1

Predictor      Coef  SE Coef      T      P
Constant     42.565    1.990  21.39  0.000
FOR01_1     0.29733  0.03259   9.12  0.000

S = 15.3709   R-Sq = 22.4%   R-Sq(adj) = 22.1%

Analysis of Variance
Source            DF     SS     MS      F      P
Regression         1  19662  19662  83.22  0.000
Residual Error   289  68280    236
Total            290  87942

Unusual Observations
Obs  FOR01_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
 47     81.5   35.000  66.800   1.261   -31.800     -2.08R
 84     60.9   26.000  60.679   0.926   -34.679     -2.26R
101     77.7   33.000  65.674   1.178   -32.674     -2.13R
118     65.5   94.000  62.030   0.970    31.970      2.08R
141     17.8   91.000  47.858   1.496    43.142      2.82R
143     25.7   17.000  50.210   1.299   -33.210     -2.17R
144     51.8   90.000  57.954   0.905    32.046      2.09R
205      0.0   80.500  42.565   1.990    37.935      2.49R
231     91.8   33.000  69.846   1.514   -36.846     -2.41R
284     86.3   24.000  68.236   1.376   -44.236     -2.89R

R denotes an observation with a large standardized residual.
```

Figure A108. Scatterplot and regression analysis of ORAM score versus 2001 percent forest canopy for area from 100 to 350 meters of assessment boundary.



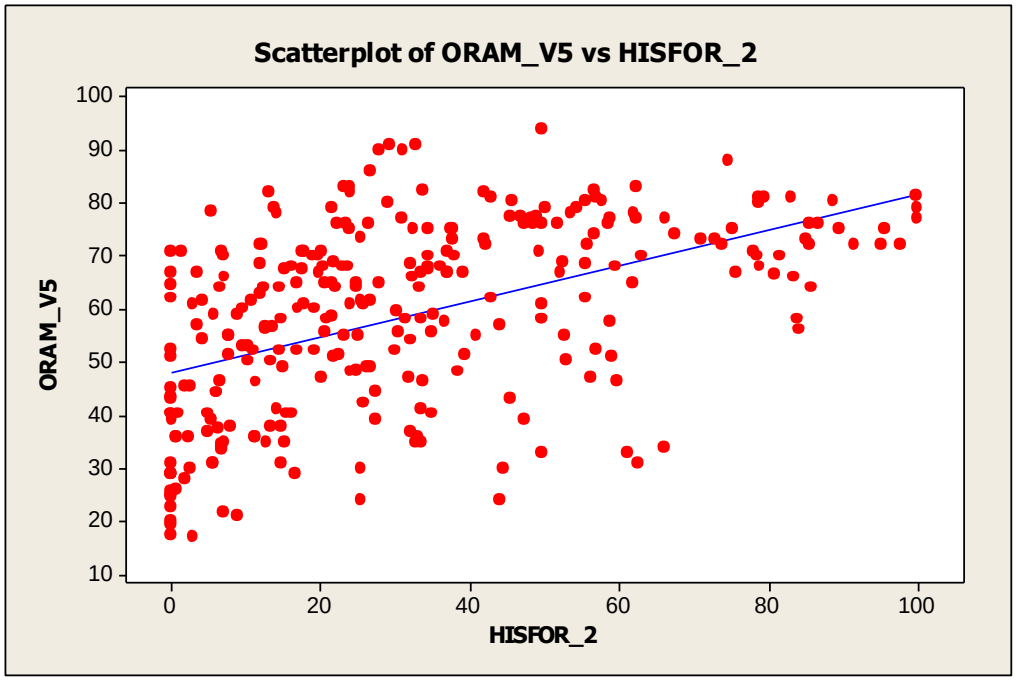

```
The regression equation is
ORAM_V5 = 44.5 + 0.333 FOR01_2

Predictor      Coef  SE Coef      T      P
Constant     44.512    1.758  25.33  0.000
FOR01_2     0.33277  0.03536   9.41  0.000

S = 15.2612   R-Sq = 23.5%   R-Sq(adj) = 23.2%

Analysis of Variance
Source            DF     SS     MS      F      P
Regression         1  20633  20633  88.59  0.000
Residual Error   289  67309    233
Total            290  87942

Unusual Observations
Obs  FOR01_2  ORAM_V5     Fit  SE Fit  Residual  St Resid
101     77.6   33.000  70.333   1.521   -37.333     -2.46R
128     87.7   39.000  73.685   1.821   -34.685     -2.29R
140     45.1   91.000  59.509   0.898    31.491      2.07R
141     32.7   91.000  55.384   0.964    35.616      2.34R
214     54.7   31.000  62.701   0.988   -31.701     -2.08R
231     63.4   33.000  65.612   1.154   -32.612     -2.14R
284     66.1   24.000  66.519   1.217   -42.519     -2.80R
286     82.6   38.000  72.010   1.669   -34.010     -2.24R

R denotes an observation with a large standardized residual.
```

Figure A109. Scatterplot and regression analysis of ORAM score versus percent historic forest for area within 100 meters of assessment boundary.



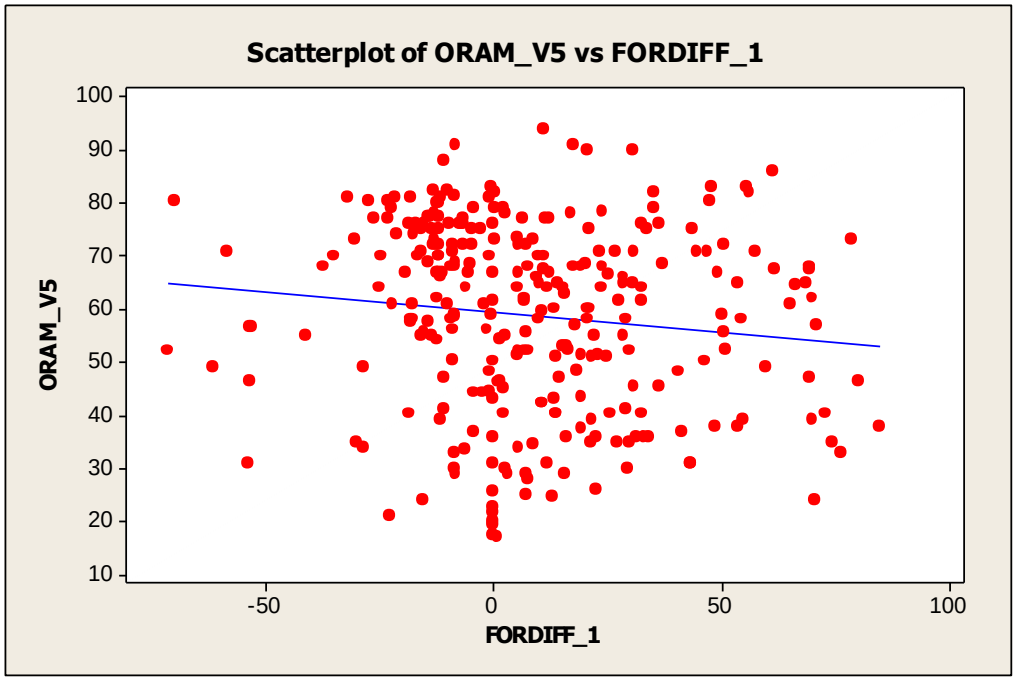

```
The regression equation is
ORAM_V5 = 49.5 + 0.205 HISFOR_1

Predictor      Coef  SE Coef      T      P
Constant     49.459    1.439  34.37  0.000
HISFOR_1    0.20483  0.02444   8.38  0.000

S = 15.6467   R-Sq = 19.5%   R-Sq(adj) = 19.3%

Analysis of Variance
Source            DF     SS     MS      F      P
Regression         1  17189  17189  70.21  0.000
Residual Error   289  70753    245
Total            290  87942

Unusual Observations
Obs  HISFOR_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
  3        82   35.000  66.231   1.280   -31.231     -2.00R
 14         0   83.000  49.459   1.439    33.541      2.15R
 15         0   83.000  49.459   1.439    33.541      2.15R
 31        52   21.000  60.041   0.930   -39.041     -2.50R
 84        38   26.000  57.271   0.934   -31.271     -2.00R
118        54   94.000  60.558   0.942    33.442      2.14R
133        43   24.000  58.218   0.919   -34.218     -2.19R
141         0   91.000  49.459   1.439    41.541      2.67R
143        24   17.000  54.456   1.051   -37.456     -2.40R
144        31   90.000  55.851   0.980    34.149      2.19R
145        31   90.000  55.877   0.979    34.123      2.19R
159         0   17.500  49.459   1.439   -31.959     -2.05R
180         1   82.000  49.686   1.418    32.314      2.07R
181         0   82.000  49.504   1.435    32.496      2.09R
182        12   86.000  51.980   1.222    34.020      2.18R
214        87   31.000  67.202   1.363   -36.202     -2.32R
231       100   33.000  69.942   1.620   -36.942     -2.37R

R denotes an observation with a large standardized residual.
```

Figure A110. Scatterplot and regression analysis of ORAM score versus percent historic forest for area from 100 to 350 meters of assessment boundary.



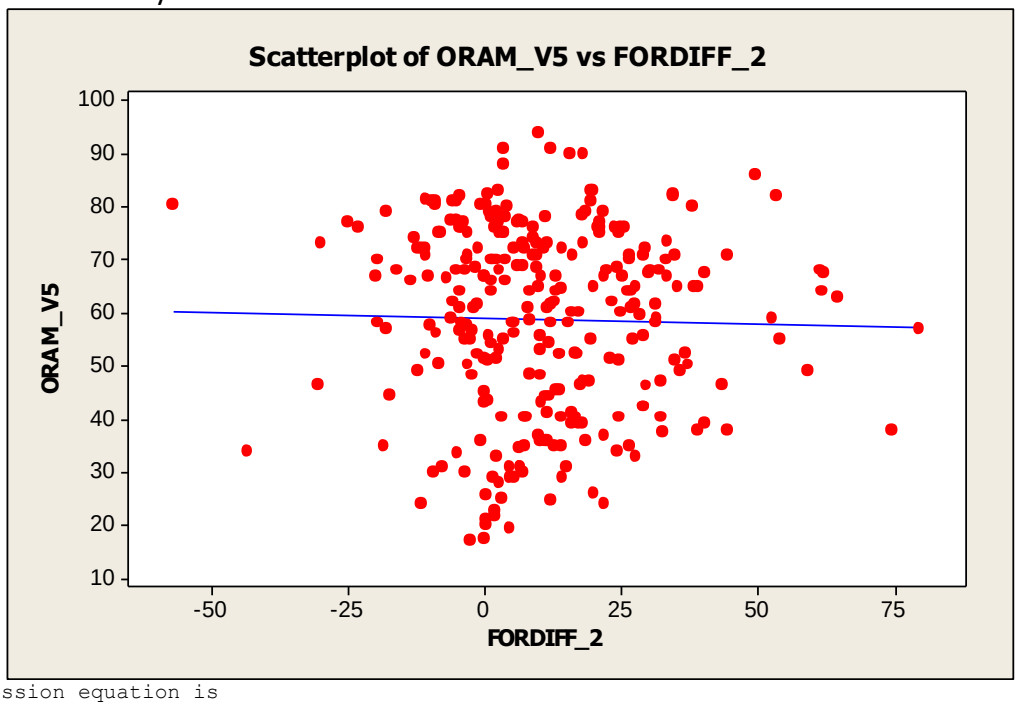

```
The regression equation is
ORAM_V5 = 48.1 + 0.336 HISFOR_2

Predictor      Coef  SE Coef      T      P
Constant     48.064    1.416  33.95  0.000
HISFOR_2    0.33596  0.03466   9.69  0.000

S = 15.1540   R-Sq = 24.5%   R-Sq(adj) = 24.3%

Analysis of Variance
Source            DF     SS     MS      F      P
Regression         1  21575  21575  93.95  0.000
Residual Error   289  66367    230
Total            290  87942

Unusual Observations
Obs  HISFOR_2  ORAM_V5     Fit  SE Fit  Residual  St Resid
 25        44   30.000  63.011   0.991   -33.011     -2.18R
 32       100   81.500  81.554   2.515    -0.054     -0.00 X
 64        89   75.000  78.090   2.184    -3.090     -0.21 X
101        50   33.000  64.772   1.084   -31.772     -2.10R
123        66   34.000  70.210   1.479   -36.210     -2.40R
131        98   72.000  80.839   2.446    -8.839     -0.59 X
132        95   72.000  79.959   2.361    -7.959     -0.53 X
133        25   24.000  56.615   0.915   -32.615     -2.16R
134       100   79.000  81.661   2.525    -2.661     -0.18 X
135       100   77.000  81.652   2.524    -4.652     -0.31 X
140        33   91.000  59.104   0.889    31.896      2.11R
141        29   91.000  57.925   0.892    33.075      2.19R
143         3   17.000  49.078   1.336   -32.078     -2.13R
144        28   90.000  57.454   0.898    32.546      2.15R
145        31   90.000  58.536   0.889    31.464      2.08R
157        92   72.000  78.820   2.253    -6.820     -0.46 X
159         0   17.500  48.064   1.416   -30.564     -2.03R
171        95   75.000  80.125   2.377    -5.125     -0.34 X
214        63   31.000  69.080   1.387   -38.080     -2.52R
231        61   33.000  68.586   1.349   -35.586     -2.36R
284        44   24.000  62.856   0.984   -38.856     -2.57R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A111. Scatterplot and regression analysis of ORAM score versus difference between 2001 percent forest canopy and percent historic forest for area within 100 meters of assessment boundary.



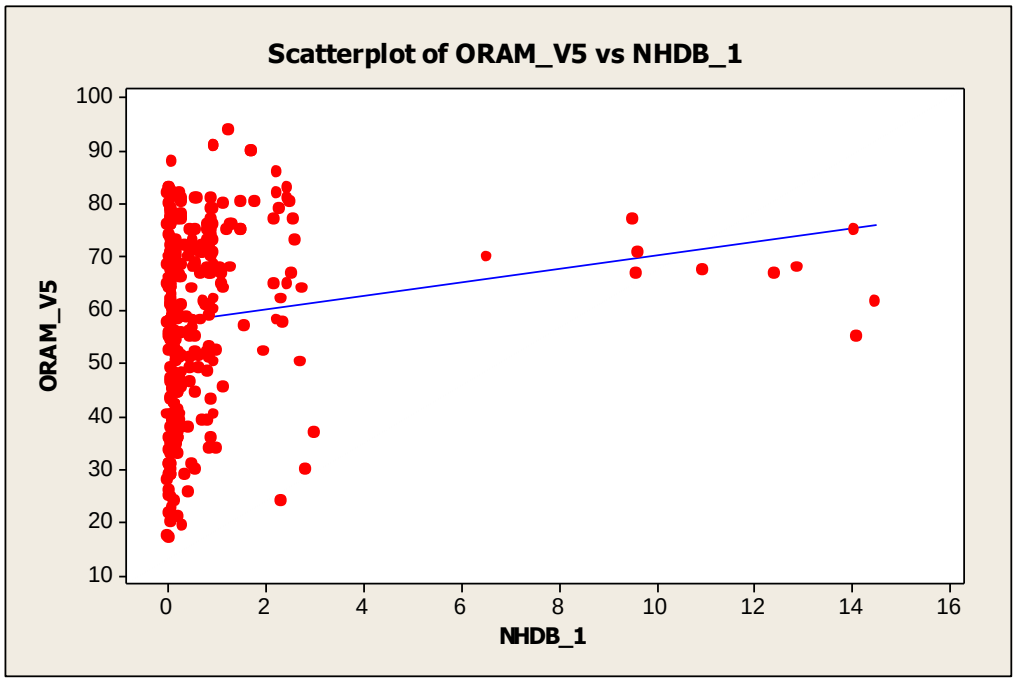

```
The regression equation is
ORAM_V5 = 59.5 - 0.0775 FORDIFF_1

Predictor       Coef  SE Coef      T      P
Constant      59.454    1.066  55.76  0.000
FORDIFF_1   -0.07747  0.03611  -2.15  0.033

S = 17.3069   R-Sq = 1.6%   R-Sq(adj) = 1.2%

Analysis of Variance
Source            DF       SS      MS     F      P
Regression         1   1378.4  1378.4  4.60  0.033
Residual Error   289  86563.7   299.5
Total            290  87942.2

Unusual Observations
Obs  FORDIFF_1  ORAM_V5    Fit  SE Fit  Residual  St Resid
  1      -61.4    49.00  64.21    2.74    -15.21     -0.89 X
 11      -58.4    71.00  63.97    2.64      7.03      0.41 X
 31      -22.5    21.00  61.19    1.53    -40.19     -2.33R
 47       74.5    35.00  53.68    2.57    -18.68     -1.09 X
 58        0.0    22.50  59.45    1.07    -36.95     -2.14R
101       76.2    33.00  53.55    2.63    -20.55     -1.20 X
108       72.7    40.00  53.82    2.51    -13.82     -0.81 X
118       11.3    94.00  58.58    1.02     35.42      2.05R
130        0.0    19.50  59.45    1.07    -39.95     -2.31R
133      -15.3    24.00  60.64    1.34    -36.64     -2.12R
143        1.3    17.00  59.35    1.05    -42.35     -2.45R
146       78.5    73.00  53.37    2.71     19.63      1.15 X
159        0.0    17.50  59.45    1.07    -41.95     -2.43R
177      -71.1    52.00  64.96    3.07    -12.96     -0.76 X
214      -53.8    31.00  63.62    2.49    -32.62     -1.90 X
258        0.0    20.00  59.45    1.07    -39.45     -2.28R
269        0.0    21.50  59.45    1.07    -37.95     -2.20R
282      -69.8    80.50  64.86    3.02     15.64      0.92 X
286       84.6    38.00  52.90    2.91    -14.90     -0.87 X
288       80.2    46.50  53.24    2.76     -6.74     -0.39 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A112. Scatterplot and regression analysis of ORAM score versus difference between 2001 percent forest canopy and percent historic forest for area from 100 to 350 meters of assessment boundary.



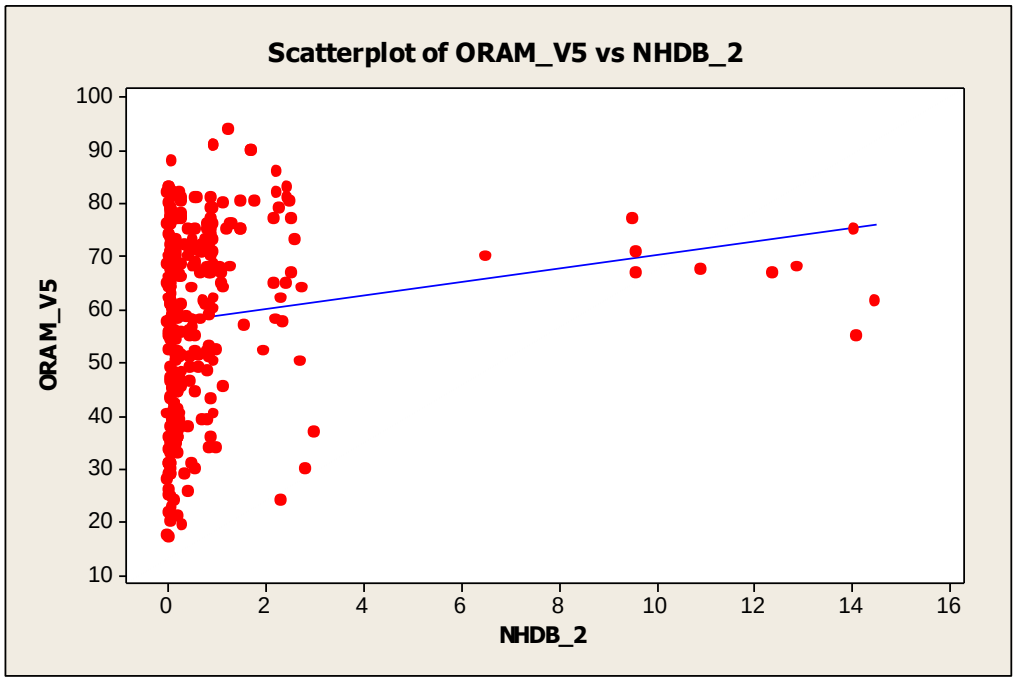

```
The regression equation is
ORAM_V5 = 59.0 - 0.0225 FORDIFF_2

Predictor       Coef  SE Coef      T      P
Constant      58.998    1.191  49.55  0.000
FORDIFF_2   -0.02251  0.05558  -0.41  0.686

S = 17.4392   R-Sq = 0.1%   R-Sq(adj) = 0.0%

Analysis of Variance
Source            DF       SS     MS     F      P
Regression         1     49.9   49.9  0.16  0.686
Residual Error   289  87892.3  304.1
Total            290  87942.2

Unusual Observations
Obs  FORDIFF_2  ORAM_V5    Fit  SE Fit  Residual  St Resid
  2       61.4    68.00  57.62    2.98     10.38     0.60 X
 19       59.0    49.00  57.67    2.86     -8.67    -0.50 X
 31        0.1    21.00  59.00    1.19    -38.00    -2.18R
 58        1.9    22.50  58.95    1.14    -36.45    -2.09R
118        9.8    94.00  58.78    1.02     35.22     2.02R
123      -43.3    34.00  59.97    3.19    -25.97    -1.51 X
130        4.8    19.50  58.89    1.08    -39.39    -2.26R
133      -11.5    24.00  59.26    1.61    -35.26    -2.03R
143       -2.6    17.00  59.06    1.27    -42.06    -2.42R
159        0.0    17.50  59.00    1.19    -41.50    -2.39R
167       53.9    55.00  57.78    2.60     -2.78    -0.16 X
181       53.4    82.00  57.80    2.57     24.20     1.40 X
191       79.8    57.00  57.20    3.96     -0.20    -0.01 X
243       52.6    59.00  57.81    2.53      1.19     0.07 X
244       61.8    64.00  57.61    3.01      6.39     0.37 X
245       64.7    63.00  57.54    3.16      5.46     0.32 X
246       62.0    67.50  57.60    3.02      9.90     0.58 X
250      -30.5    46.50  59.68    2.52    -13.18    -0.76 X
258        0.2    20.00  58.99    1.19    -38.99    -2.24R
269        2.0    21.50  58.95    1.14    -37.45    -2.15R
282      -57.2    80.50  60.29    3.92     20.21     1.19 X
286       74.6    38.00  57.32    3.68    -19.32    -1.13 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A113. Scatterplot and regression analysis of ORAM score versus ODNR Natural Heritage density data for area within 100 meters of assessment boundary.



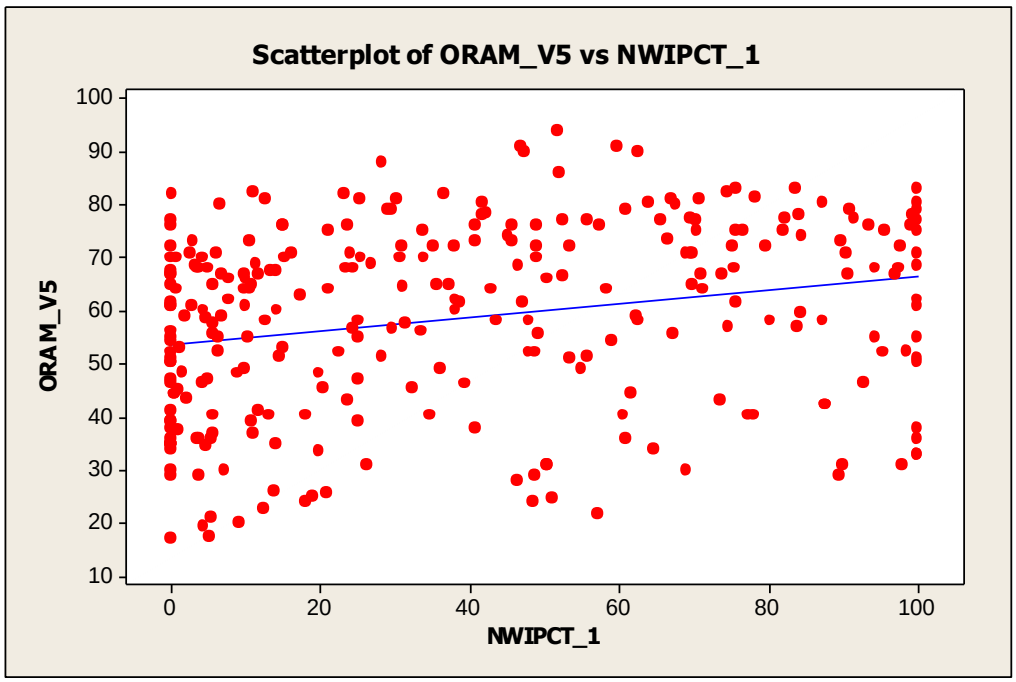

```
The regression equation is
ORAM_V5 = 57.6 + 1.29 NHDB_1

Predictor     Coef  SE Coef      T      P
Constant    57.583    1.097  52.50  0.000
NHDB_1      1.2878   0.4720   2.73  0.007

S = 17.2238   R-Sq = 2.5%   R-Sq(adj) = 2.2%

Analysis of Variance
Source            DF       SS      MS     F      P
Regression         1   2207.9  2207.9  7.44  0.007
Residual Error   289  85734.2   296.7
Total            290  87942.2

Unusual Observations
Obs  NHDB_1  ORAM_V5    Fit  SE Fit  Residual  St Resid
 31     0.2    21.00  57.82    1.07    -36.82    -2.14R
 58     0.1    22.50  57.70    1.08    -35.20    -2.05R
 94     9.6    71.00  69.97    4.23      1.03     0.06 X
 95     9.5    77.00  69.86    4.20      7.14     0.43 X
 96     9.6    67.00  69.95    4.23     -2.95    -0.18 X
103     6.5    70.00  65.99    2.84      4.01     0.24 X
117    14.1    55.00  75.76    6.32    -20.76    -1.30 X
118     1.2    94.00  59.18    1.02     34.82     2.03R
130     0.3    19.50  57.98    1.05    -38.48    -2.24R
133     2.3    24.00  60.55    1.21    -36.55    -2.13R
143     0.0    17.00  57.62    1.09    -40.62    -2.36R
149    14.5    61.50  76.27    6.50    -14.77    -0.93 X
159     0.0    17.50  57.58    1.10    -40.08    -2.33R
160    14.1    75.00  75.71    6.30     -0.71    -0.04 X
196    10.9    67.50  71.67    4.84     -4.17    -0.25 X
211    12.4    67.00  73.57    5.52     -6.57    -0.40 X
230    12.9    68.00  74.19    5.75     -6.19    -0.38 X
258     0.1    20.00  57.68    1.08    -37.68    -2.19R
269     0.0    21.50  57.63    1.09    -36.13    -2.10R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A114. Scatterplot and regression analysis of ORAM score versus ODNR Natural Heritage density data for area from 100 to 350 meters of assessment boundary.



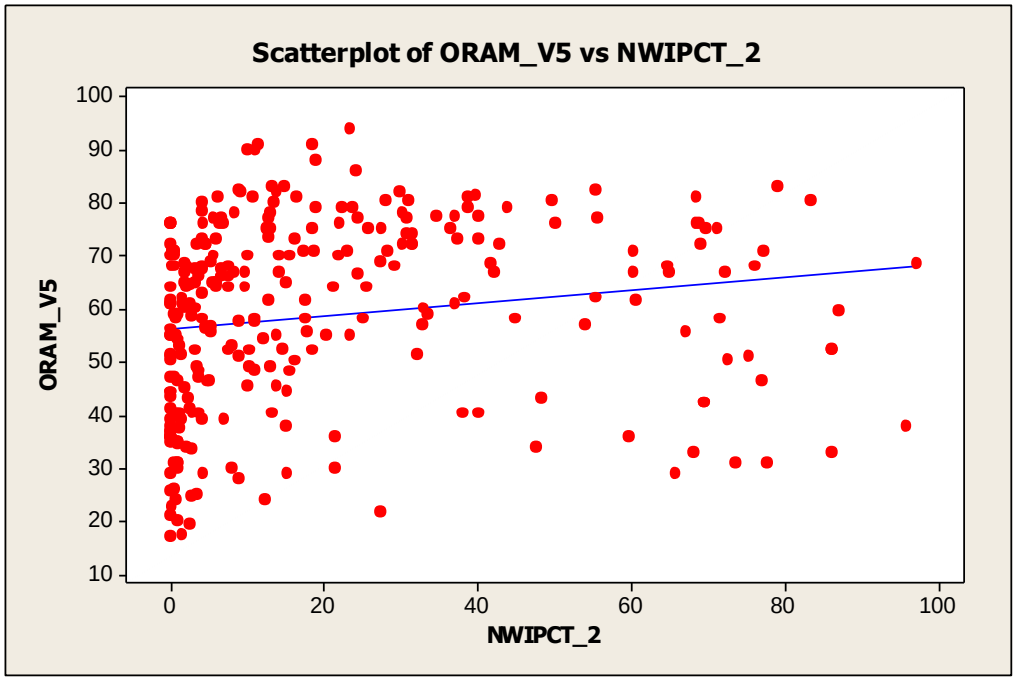

```
The regression equation is
ORAM_V5 = 57.6 + 1.29 NHDB_2

Predictor     Coef  SE Coef      T      P
Constant    57.582    1.097  52.50  0.000
NHDB_2      1.2889   0.4724   2.73  0.007

S = 17.2237   R-Sq = 2.5%   R-Sq(adj) = 2.2%

Analysis of Variance
Source            DF       SS      MS     F      P
Regression         1   2208.6  2208.6  7.45  0.007
Residual Error   289  85733.6   296.7
Total            290  87942.2

Unusual Observations
Obs  NHDB_2  ORAM_V5    Fit  SE Fit  Residual  St Resid
 31     0.2    21.00  57.82    1.07    -36.82     -2.14R
 58     0.1    22.50  57.70    1.08    -35.20     -2.05R
 94     9.6    71.00  69.97    4.23      1.03      0.06 X
 95     9.5    77.00  69.85    4.19      7.15      0.43 X
 96     9.6    67.00  69.95    4.23     -2.95     -0.18 X
103     6.5    70.00  65.99    2.84      4.01      0.24 X
117    14.1    55.00  75.76    6.32    -20.76     -1.30 X
118     1.2    94.00  59.18    1.02     34.82      2.03R
130     0.3    19.50  57.98    1.05    -38.48     -2.24R
133     2.3    24.00  60.55    1.21    -36.55     -2.13R
143     0.0    17.00  57.62    1.09    -40.62     -2.36R
149    14.5    61.50  76.27    6.50    -14.77     -0.93 X
159     0.0    17.50  57.58    1.10    -40.08     -2.33R
160    14.1    75.00  75.71    6.30     -0.71     -0.04 X
196    10.9    67.50  71.67    4.84     -4.17     -0.25 X
211    12.4    67.00  73.57    5.52     -6.57     -0.40 X
230    12.9    68.00  74.20    5.75     -6.20     -0.38 X
258     0.1    20.00  57.68    1.08    -37.68     -2.19R
269     0.0    21.50  57.63    1.09    -36.13     -2.10R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A115. Scatterplot and regression analysis of ORAM score versus NWI data for area within 100 meters of assessment boundary.



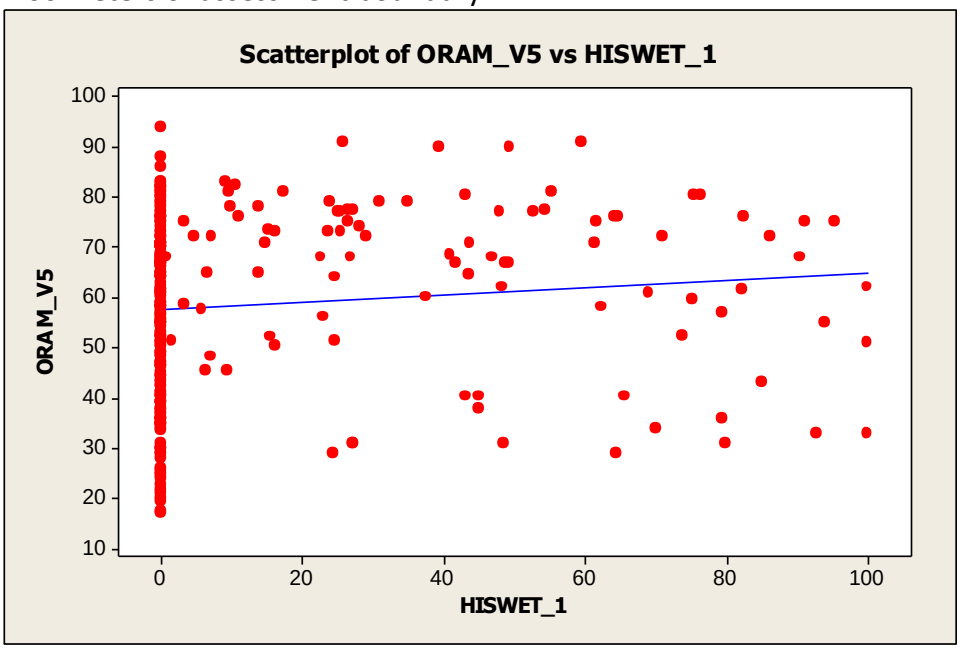

```
The regression equation is
ORAM_V5 = 53.8 + 0.128 NWIPCT_1

Predictor      Coef  SE Coef      T      P
Constant     53.776    1.522  35.33  0.000
NWIPCT_1    0.12752  0.02961   4.31  0.000

S = 16.9100   R-Sq = 6.0%   R-Sq(adj) = 5.7%

Analysis of Variance
Source            DF       SS      MS      F      P
Regression         1   5303.2  5303.2  18.55  0.000
Residual Error   289  82639.0   285.9
Total            290  87942.2

Unusual Observations
Obs  NWIPCT_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
 21        51   24.500  60.281   1.053   -35.781     -2.12R
130         5   19.500  54.361   1.422   -34.861     -2.07R
143         0   17.000  53.776   1.522   -36.776     -2.18R
159         5   17.500  54.454   1.406   -36.954     -2.19R
214        98   31.000  66.260   2.006   -35.260     -2.10R
258         9   20.000  54.954   1.327   -34.954     -2.07R
266        90   31.000  65.225   1.801   -34.225     -2.04R
269        57   21.500  61.071   1.128   -39.571     -2.35R
271        89   29.000  65.183   1.793   -36.183     -2.15R
284        48   24.000  59.949   1.030   -35.949     -2.13R

R denotes an observation with a large standardized residual.
```

Figure A116. Scatterplot and regression analysis of ORAM score versus NWI data for area from 100 to 350 meters of assessment boundary.



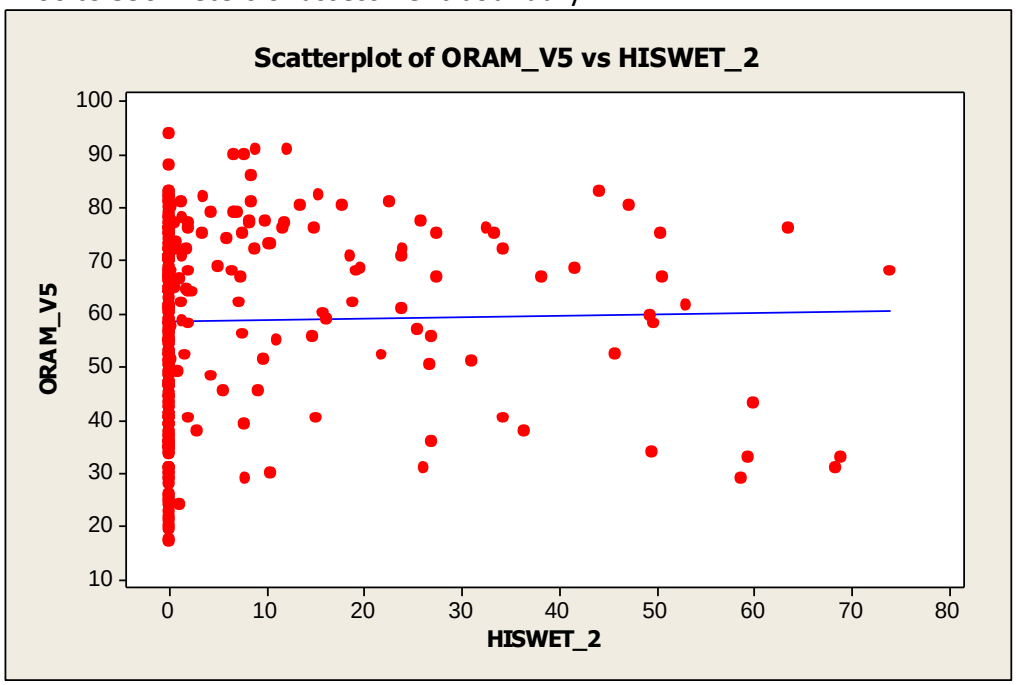

```
The regression equation is
ORAM_V5 = 56.3 + 0.123 NWIPCT_2

Predictor      Coef  SE Coef      T      P
Constant     56.335    1.308  43.08  0.000
NWIPCT_2    0.12288  0.04236   2.90  0.004

S = 17.1956   R-Sq = 2.8%   R-Sq(adj) = 2.5%

Analysis of Variance
Source            DF       SS      MS     F      P
Regression         1   2488.0  2488.0  8.41  0.004
Residual Error   289  85454.1   295.7
Total            290  87942.2

Unusual Observations
Obs  NWIPCT_2  ORAM_V5    Fit  SE Fit  Residual  St Resid
 31       0.0    21.00  56.34    1.31    -35.34     -2.06R
 46      97.5    68.50  68.31    3.45      0.19      0.01 X
 94      77.3    71.00  65.83    2.64      5.17      0.30 X
101      86.1    33.00  66.92    2.99    -33.92     -2.00RX
118      23.6    94.00  59.24    1.02     34.76      2.03R
130       2.5    19.50  56.64    1.24    -37.14     -2.17R
143       0.0    17.00  56.34    1.31    -39.34     -2.29R
159       1.8    17.50  56.55    1.26    -39.05     -2.28R
188      75.4    51.00  65.60    2.57    -14.60     -0.86 X
199      76.2    68.00  65.70    2.60      2.30      0.14 X
214      77.8    31.00  65.90    2.66    -34.90     -2.05RX
229      79.3    83.00  66.07    2.72     16.93      1.00 X
258       0.9    20.00  56.45    1.28    -36.45     -2.13R
266      73.6    31.00  65.38    2.50    -34.38     -2.02RX
269      27.4    21.50  59.70    1.06    -38.20     -2.23R
271      65.9    29.00  64.43    2.20    -35.43     -2.08R
272      87.2    59.50  67.05    3.03     -7.55     -0.45 X
276      86.3    52.00  66.93    3.00    -14.93     -0.88 X
278      86.2    52.50  66.93    2.99    -14.43     -0.85 X
282      83.6    80.50  66.60    2.89     13.90      0.82 X
286      96.1    38.00  68.14    3.39    -30.14     -1.79 X
288      77.2    46.50  65.82    2.64    -19.32     -1.14 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A117. Scatterplot and regression analysis of ORAM score versus historic wetland data for area within 100 meters of assessment boundary.



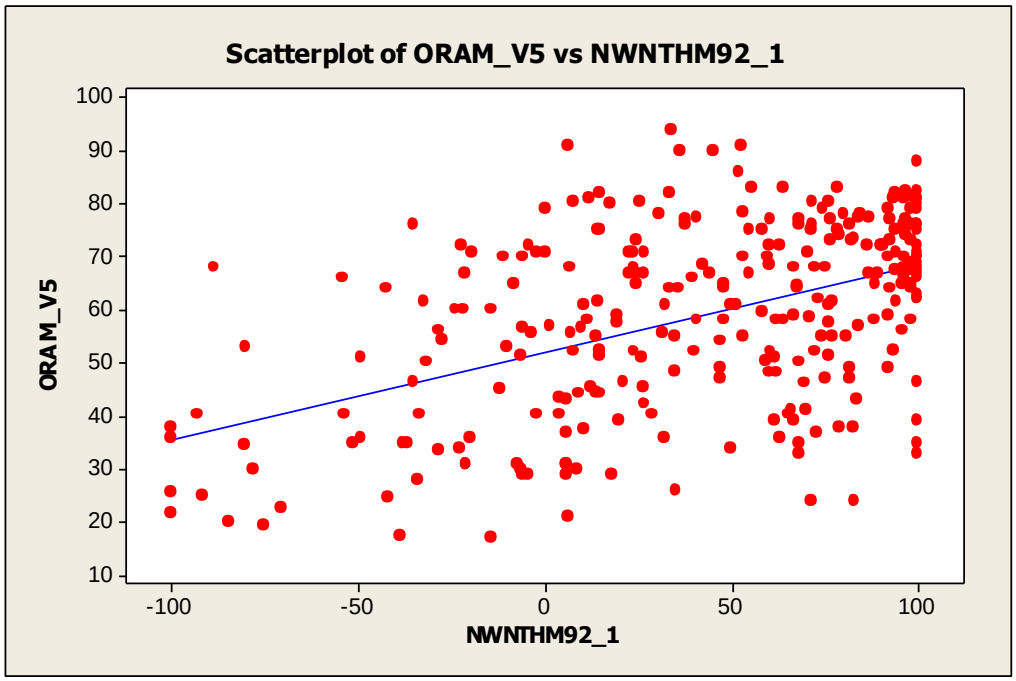

```
The regression equation is
ORAM_V5 = 57.7 + 0.0724 HISWET_1

Predictor      Coef  SE Coef      T      P
Constant     57.741    1.156  49.94  0.000
HISWET_1    0.07242  0.03947   1.83  0.068

S = 17.3434   R-Sq = 1.2%   R-Sq(adj) = 0.8%

Analysis of Variance
Source            DF       SS      MS     F      P
Regression         1   1012.5  1012.5  3.37  0.068
Residual Error   289  86929.7   300.8
Total            290  87942.2

Unusual Observations
Obs  HISWET_1  ORAM_V5    Fit  SE Fit  Residual  St Resid
 27       100    62.00  64.97    3.54     -2.97     -0.18 X
 30        79    36.00  63.48    2.77    -27.48     -1.61 X
 31         0    21.00  57.74    1.16    -36.74     -2.12R
 48        94    55.00  64.54    3.32     -9.54     -0.56 X
 58         0    22.50  57.74    1.16    -35.24     -2.04R
 60        82    61.50  63.69    2.88     -2.19     -0.13 X
 66        82    76.00  63.71    2.89     12.29      0.72 X
 74        79    57.00  63.49    2.77     -6.49     -0.38 X
 93        86    72.00  63.97    3.02      8.03      0.47 X
100        95    75.00  64.64    3.36     10.36      0.61 X
101        93    33.00  64.45    3.27    -31.45     -1.85 X
118         0    94.00  57.74    1.16     36.26      2.10R
120        91    75.00  64.34    3.21     10.66      0.63 X
130         0    19.50  57.74    1.16    -38.24     -2.21R
143         0    17.00  57.74    1.16    -40.74     -2.35R
159         0    17.50  57.74    1.16    -40.24     -2.33R
163        85    43.00  63.90    2.99    -20.90     -1.22 X
188       100    51.00  64.97    3.54    -13.97     -0.82 X
199        90    68.00  64.29    3.18      3.71      0.22 X
205        76    80.50  63.27    2.66     17.23      1.01 X
214        80    31.00  63.53    2.80    -32.53     -1.90 X
231       100    33.00  64.98    3.55    -31.98     -1.88 X
258         0    20.00  57.74    1.16    -37.74     -2.18R
269         0    21.50  57.74    1.16    -36.24     -2.09R
272        75    59.50  63.18    2.62     -3.68     -0.21 X
278        74    52.50  63.08    2.57    -10.58     -0.62 X
282        75    80.50  63.20    2.63     17.30      1.01 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A118. Scatterplot and regression analysis of ORAM score versus historic wetland data for area from 100 to 350 meters of assessment boundary.



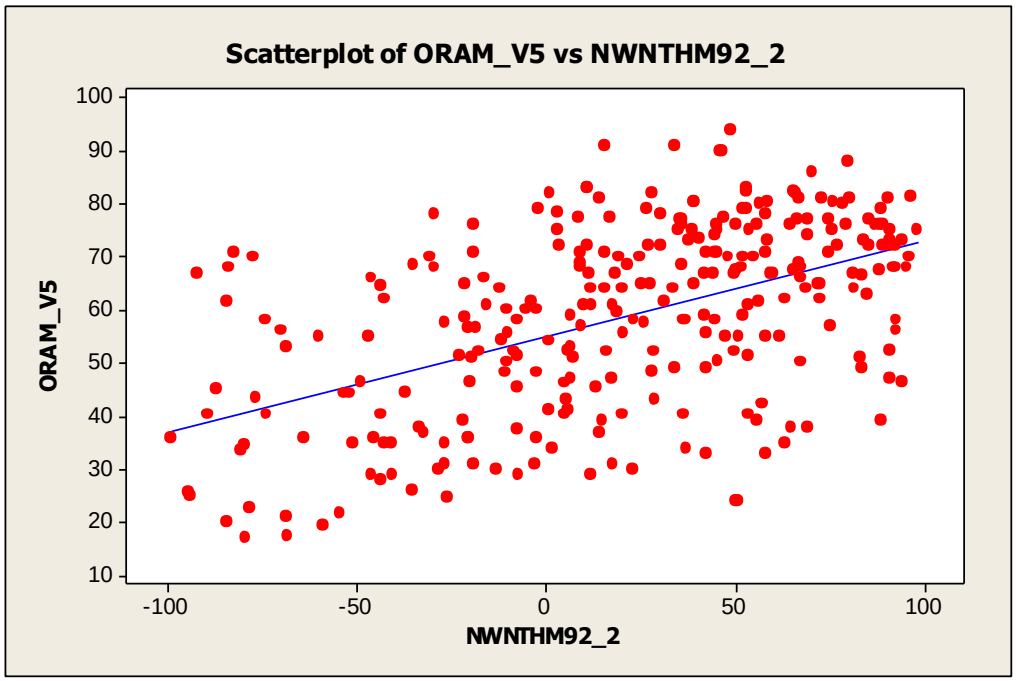

```
The regression equation is
ORAM_V5 = 58.6 + 0.0269 HISWET_2

Predictor      Coef  SE Coef      T      P
Constant     58.564    1.133  51.68  0.000
HISWET_2    0.02693  0.07042   0.38  0.702

S = 17.4397   R-Sq = 0.1%   R-Sq(adj) = 0.0%

Analysis of Variance
Source            DF       SS     MS     F      P
Regression         1     44.5   44.5  0.15  0.702
Residual Error   289  87897.7  304.1
Total            290  87942.2

Unusual Observations
Obs  HISWET_2  ORAM_V5    Fit  SE Fit  Residual  St Resid
 31       0.0    21.00  58.56    1.13    -37.56     -2.16R
 43      50.7    67.00  59.93    3.24      7.07      0.41 X
 58       0.0    22.50  58.56    1.13    -36.06     -2.07R
 60      53.1    61.50  59.99    3.41      1.51      0.09 X
 66      63.5    76.00  60.28    4.11     15.72      0.93 X
101      59.5    33.00  60.17    3.84    -27.17     -1.60 X
118       0.0    94.00  58.56    1.13     35.44      2.04R
120      50.5    75.00  59.92    3.23     15.08      0.88 X
123      49.5    34.00  59.90    3.16    -25.90     -1.51 X
130       0.0    19.50  58.56    1.13    -39.06     -2.24R
143       0.0    17.00  58.56    1.13    -41.56     -2.39R
159       0.0    17.50  58.56    1.13    -41.06     -2.36R
163      60.0    43.00  60.18    3.87    -17.18     -1.01 X
199      74.0    68.00  60.56    4.83      7.44      0.44 X
214      68.4    31.00  60.41    4.45    -29.41     -1.74 X
229      44.2    83.00  59.75    2.81     23.25      1.35 X
231      69.0    33.00  60.42    4.49    -27.42     -1.63 X
258       0.0    20.00  58.56    1.13    -38.56     -2.22R
269       0.0    21.50  58.56    1.13    -37.06     -2.13R
271      58.6    29.00  60.14    3.78    -31.14     -1.83 X
272      49.3    59.50  59.89    3.15     -0.39     -0.02 X
274      49.7    58.00  59.90    3.18     -1.90     -0.11 X
278      45.8    52.50  59.80    2.92     -7.30     -0.42 X
282      47.3    80.50  59.84    3.02     20.66      1.20 X
283      41.6    68.50  59.68    2.65      8.82      0.51 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A119. Scatterplot and regression analysis of ORAM score versus 1992 NLCD natural minus human-dominated land use data for area within 100 meters of assessment boundary.



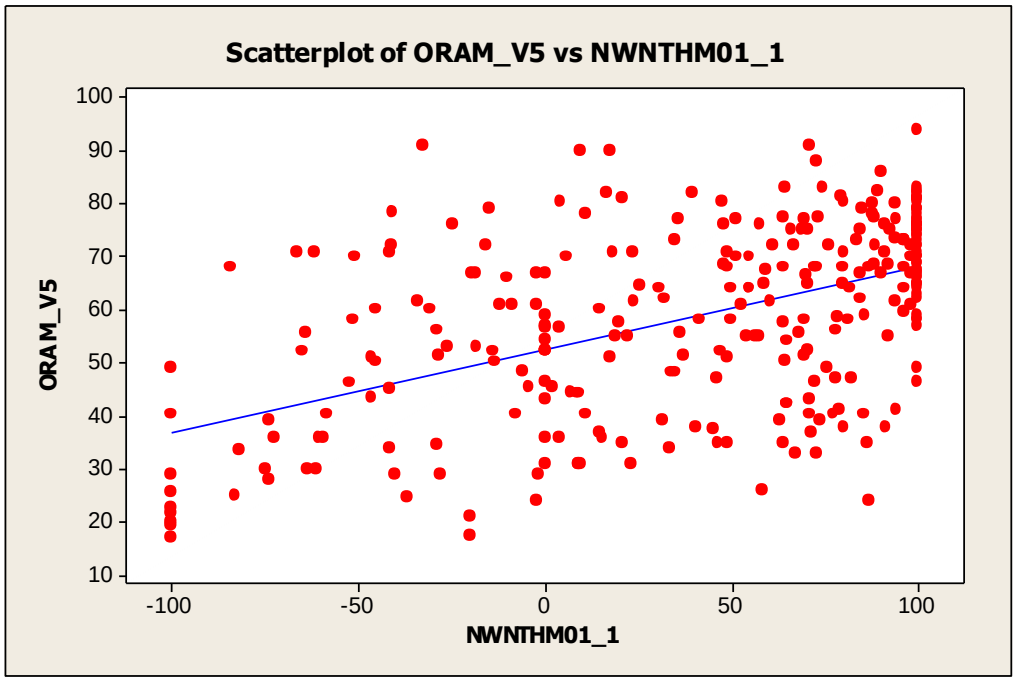

```
The regression equation is
ORAM_V5 = 52.0 + 0.166 NWNTHM92_1

Predictor       Coef  SE Coef      T      P
Constant      51.958    1.157  44.89  0.000
NWNTHM92_1   0.16583  0.01785   9.29  0.000

S = 15.3068   R-Sq = 23.0%   R-Sq(adj) = 22.7%

Analysis of Variance
Source            DF     SS     MS      F      P
Regression         1  20230  20230  86.34  0.000
Residual Error   289  67712    234
Total            290  87942

Unusual Observations
Obs  NWNTHM92_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
 31           6   21.000  52.974   1.092   -31.974    -2.09R
 47         100   35.000  68.542   1.384   -33.542    -2.20R
 56         -88   68.000  37.365   2.470    30.635     2.03RX
 84          35   26.000  57.811   0.903   -31.811    -2.08R
118          34   94.000  57.604   0.906    36.396     2.38R
130         -75   19.500  39.521   2.256   -20.021    -1.32 X
133          71   24.000  63.758   1.047   -39.758    -2.60R
141           6   91.000  53.017   1.089    37.983     2.49R
143         -14   17.000  49.589   1.333   -32.589    -2.14R
144          36   90.000  57.989   0.901    32.011     2.09R
145          45   90.000  59.437   0.900    30.563     2.00R
187         -80   34.500  38.627   2.344    -4.127    -0.27 X
189        -100   38.000  35.375   2.671     2.625     0.17 X
190         -78   30.000  39.023   2.305    -9.023    -0.60 X
231         100   33.000  68.542   1.384   -35.542    -2.33R
253        -100   25.500  35.375   2.671    -9.875    -0.66 X
255         -80   53.000  38.767   2.330    14.233     0.94 X
258         -85   20.000  37.926   2.414   -17.926    -1.19 X
269        -100   21.500  35.375   2.671   -13.875    -0.92 X
270         -93   40.000  36.559   2.551     3.441     0.23 X
280        -100   36.000  35.375   2.671     0.625     0.04 X
284          83   24.000  65.726   1.170   -41.726    -2.73R
287         -92   25.000  36.780   2.529   -11.780    -0.78 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A120. Scatterplot and regression analysis of ORAM score versus 1992 natural minus human-dominated land use data for area from 100 to 350 meters of assessment boundary.



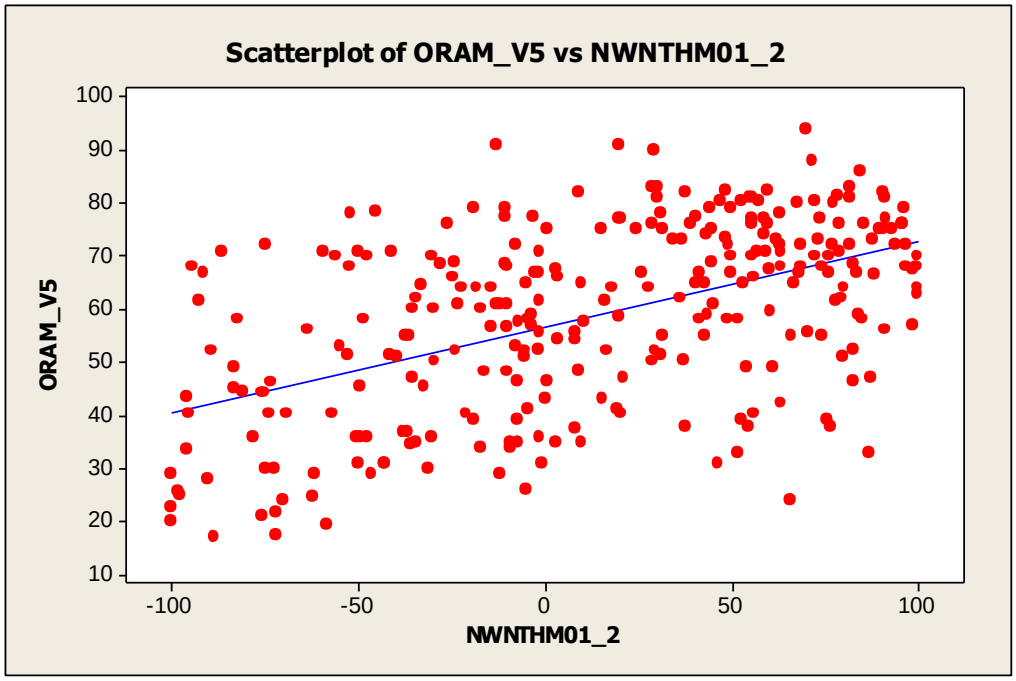

```
The regression equation is
ORAM_V5 = 55.0 + 0.181 NWNTHM92_2

Predictor       Coef  SE Coef      T      P
Constant     55.0439   0.9543  57.68  0.000
NWNTHM92_2  0.18056  0.01796  10.05  0.000

S = 15.0153   R-Sq = 25.9%   R-Sq(adj) = 25.7%

Analysis of Variance
Source            DF     SS     MS       F      P
Regression         1  22785  22785  101.06  0.000
Residual Error   289  65157    225
Total            290  87942

Unusual Observations
Obs  NWNTHM92_2  ORAM_V5     Fit  SE Fit  Residual  St Resid
 47        63.0   35.000  66.420   1.165   -31.420    -2.10R
118        49.0   94.000  63.884   1.018    30.116     2.01R
128        88.3   39.000  70.995   1.503   -31.995    -2.14R
133        50.1   24.000  64.093   1.028   -40.093    -2.68R
141        15.4   91.000  57.828   0.885    33.172     2.21R
156       -82.2   71.000  40.199   2.045    30.801     2.07R
178       -89.2   40.000  38.947   2.158     1.053     0.07 X
231        58.0   33.000  65.513   1.108   -32.513    -2.17R
252       -91.9   67.000  38.454   2.203    28.546     1.92 X
253       -94.4   25.500  37.994   2.245   -12.494    -0.84 X
280       -99.1   36.000  37.153   2.322    -1.153    -0.08 X
284        51.2   24.000  64.297   1.039   -40.297    -2.69R
287       -94.0   25.000  38.079   2.237   -13.079    -0.88 X

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A121. Scatterplot and regression analysis of ORAM score versus 2001 NLCD natural minus human-dominated land use data for area within 100 meters of assessment boundary.



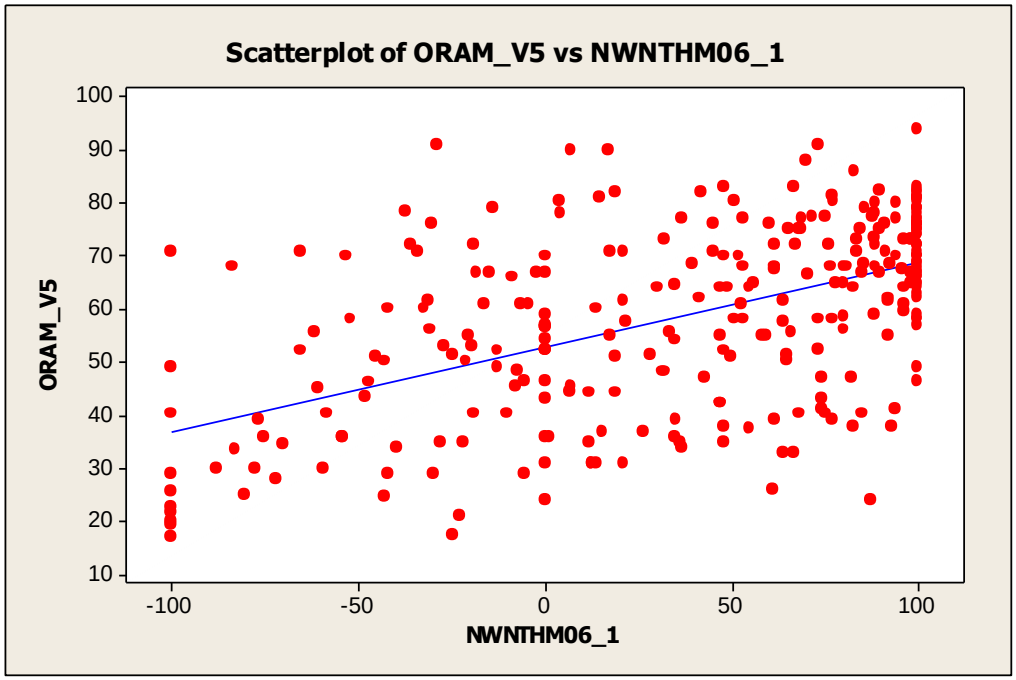

```
The regression equation is
ORAM_V5 = 52.5 + 0.156 NWNTHM01_1

Predictor       Coef  SE Coef      T      P
Constant      52.531    1.072  49.01  0.000
NWNTHM01_1   0.15585  0.01539  10.13  0.000

S = 14.9860   R-Sq = 26.2%   R-Sq(adj) = 25.9%

Analysis of Variance
Source            DF     SS     MS       F      P
Regression         1  23039  23039  102.58  0.000
Residual Error   289  64904    225
Total            290  87942

Unusual Observations
Obs  NWNTHM01_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
  1        -100   49.000  36.946   2.325    12.054     0.81 X
 58        -100   22.500  36.946   2.325   -14.446    -0.98 X
 84          58   26.000  61.570   0.922   -35.570    -2.38R
101          73   33.000  63.838   1.012   -30.838    -2.06R
130        -100   19.500  36.946   2.325   -17.446    -1.18 X
141         -33   91.000  47.442   1.421    43.558     2.92R
143        -100   17.000  36.946   2.325   -19.946    -1.35 X
144          18   90.000  55.296   0.942    34.704     2.32R
145          10   90.000  54.030   0.995    35.970     2.41R
159         -20   17.500  49.414   1.273   -31.914    -2.14R
223          86   35.000  65.977   1.132   -30.977    -2.07R
231          67   33.000  63.015   0.974   -30.015    -2.01R
232        -100   29.000  36.946   2.325    -7.946    -0.54 X
253        -100   25.500  36.946   2.325   -11.446    -0.77 X
258        -100   20.000  36.946   2.325   -16.946    -1.14 X
259         -40   78.500  46.231   1.517    32.269     2.16R
269        -100   21.500  36.946   2.325   -15.446    -1.04 X
270        -100   40.000  36.946   2.325     3.054     0.21 X
284          87   24.000  66.058   1.137   -42.058    -2.81R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A122. Scatterplot and regression analysis of ORAM score versus 2001 NLCD natural minus human-dominated land use data for area from 100 to 350 meters of assessment boundary.



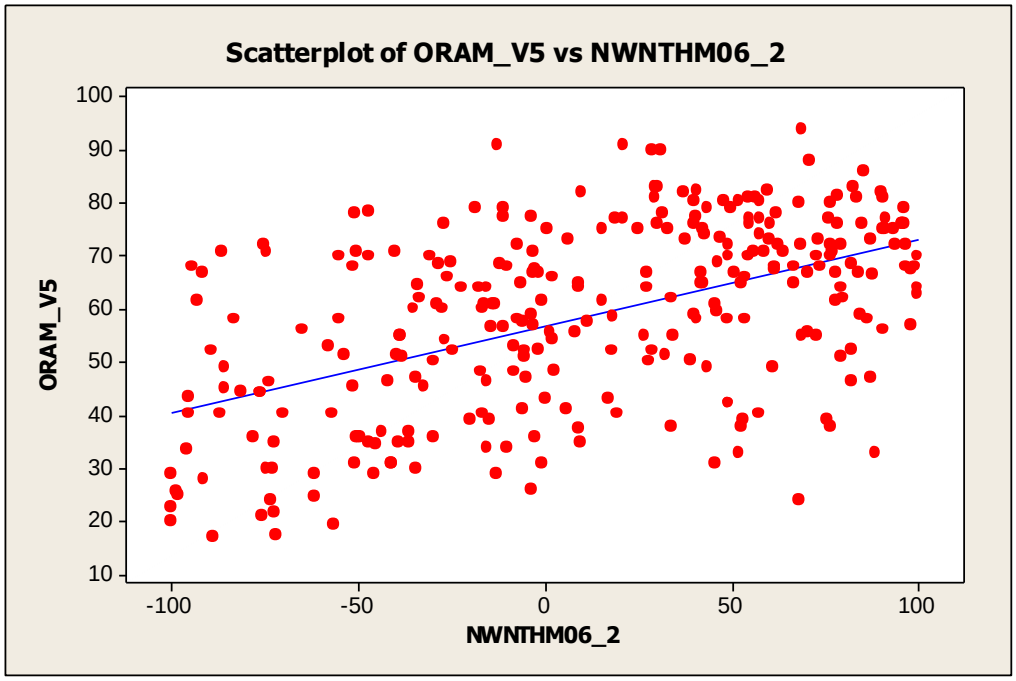

```
The regression equation is
ORAM_V5 = 56.6 + 0.161 NWNTHM01_2

Predictor       Coef  SE Coef      T      P
Constant     56.5645   0.9028  62.66  0.000
NWNTHM01_2  0.16144  0.01583  10.20  0.000

S = 14.9593   R-Sq = 26.5%   R-Sq(adj) = 26.2%

Analysis of Variance
Source            DF     SS     MS       F      P
Regression         1  23269  23269  103.98  0.000
Residual Error   289  64673    224
Total            290  87942

Unusual Observations
Obs  NWNTHM01_2  ORAM_V5     Fit  SE Fit  Residual  St Resid
101          87   33.000  70.596   1.455   -37.596     -2.53R
140          20   91.000  59.747   0.882    31.253      2.09R
141         -13   91.000  54.470   0.972    36.530      2.45R
214          47   31.000  64.111   1.022   -33.111     -2.22R
231          52   33.000  64.881   1.063   -31.881     -2.14R
284          66   24.000  67.180   1.205   -43.180     -2.90R
286          76   38.000  68.912   1.327   -30.912     -2.07R

R denotes an observation with a large standardized residual.
```

Figure A123. Scatterplot and regression analysis of ORAM score versus 2006 NLCD natural minus human-dominated land use data for area within 100 meters of assessment boundary.



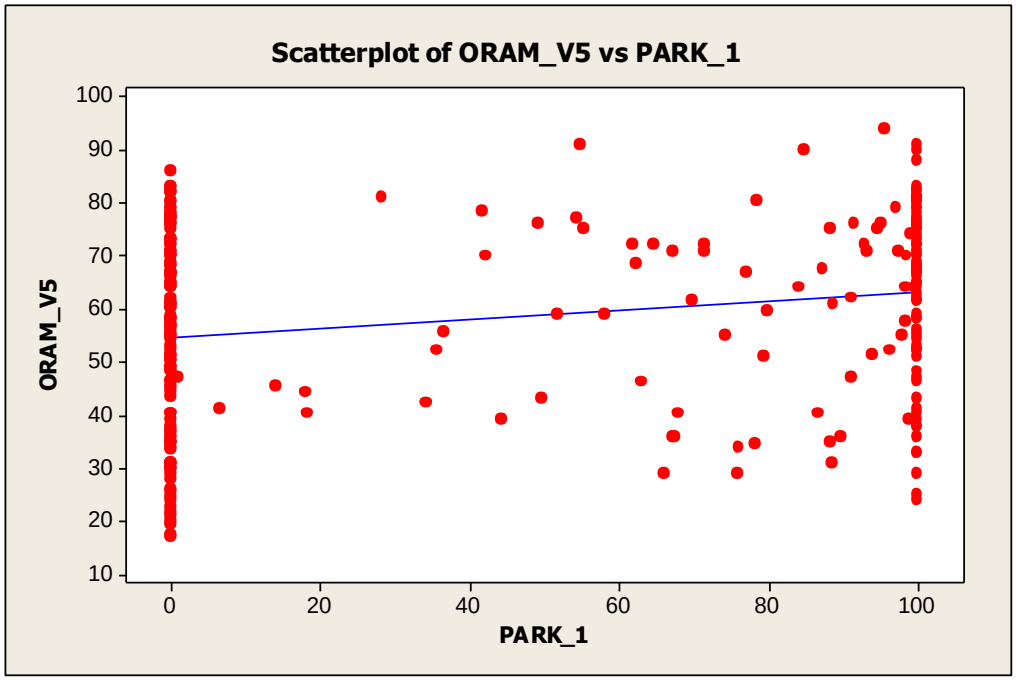

```
The regression equation is
ORAM_V5 = 52.7 + 0.160 NWNTHM06_1

Predictor       Coef  SE Coef      T      P
Constant      52.727    1.028  51.27  0.000
NWNTHM06_1   0.16033  0.01487  10.78  0.000

S = 14.7301   R-Sq = 28.7%   R-Sq(adj) = 28.4%

Analysis of Variance
Source            DF     SS     MS       F      P
Regression         1  25236  25236  116.31  0.000
Residual Error   289  62706    217
Total            290  87942

Unusual Observations
Obs  NWNTHM06_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
  1        -100   49.000  36.694   2.220    12.306     0.85 X
 11        -100   71.000  36.694   2.220    34.306     2.36RX
 58        -100   22.500  36.694   2.220   -14.194    -0.97 X
 84          61   26.000  62.543   0.932   -36.543    -2.49R
101          67   33.000  63.416   0.966   -30.416    -2.07R
130        -100   19.500  36.694   2.220   -17.194    -1.18 X
141         -29   91.000  48.146   1.309    42.854     2.92R
143        -100   17.000  36.694   2.220   -19.694    -1.35 X
144          17   90.000  55.441   0.916    34.559     2.35R
145           7   90.000  53.915   0.973    36.085     2.46R
159         -25   17.500  48.795   1.264   -31.295    -2.13R
231          64   33.000  62.930   0.946   -29.930    -2.04R
232        -100   29.000  36.694   2.220    -7.694    -0.53 X
253        -100   25.500  36.694   2.220   -11.194    -0.77 X
258        -100   20.000  36.694   2.220   -16.694    -1.15 X
259         -37   78.500  46.754   1.408    31.746     2.17R
269        -100   21.500  36.694   2.220   -15.194    -1.04 X
270        -100   40.000  36.694   2.220     3.306     0.23 X
284          87   24.000  66.682   1.134   -42.682    -2.91R
286          93   38.000  67.594   1.191   -29.594    -2.02R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A124. Scatterplot and regression analysis of ORAM score versus 2006 NLCD natural minus human-dominated land use data for area from 100 to 350 meters of assessment boundary.



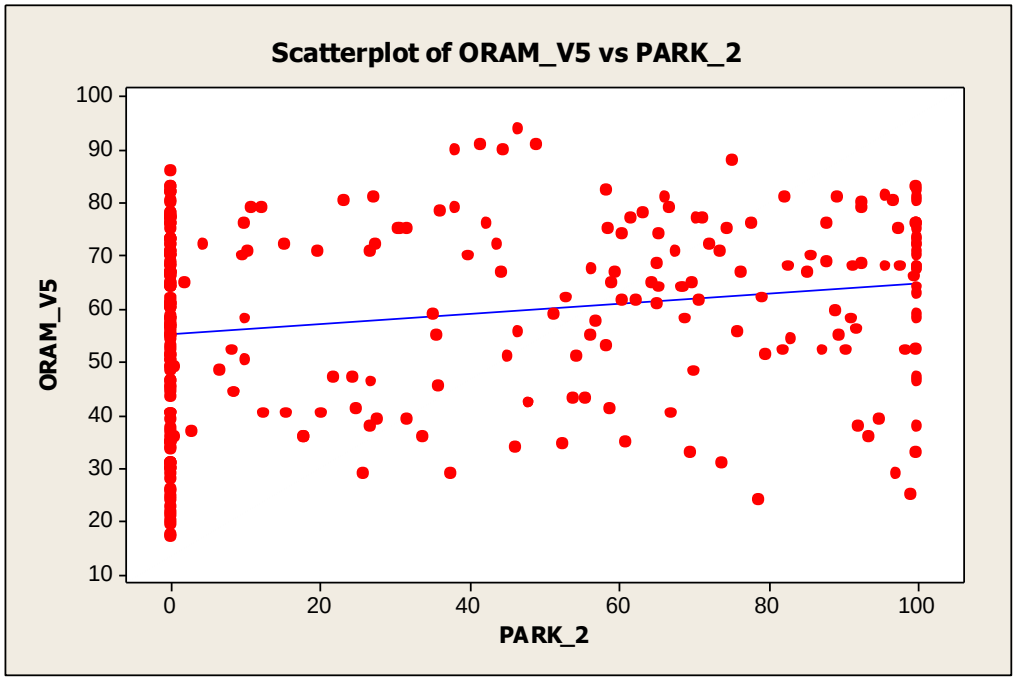

```
The regression equation is
ORAM_V5 = 56.8 + 0.163 NWNTHM06_2

Predictor       Coef  SE Coef      T      P
Constant     56.8366   0.8889  63.94  0.000
NWNTHM06_2  0.16303  0.01552  10.50  0.000

S = 14.8410   R-Sq = 27.6%   R-Sq(adj) = 27.4%

Analysis of Variance
Source            DF     SS     MS       F      P
Regression         1  24289  24289  110.28  0.000
Residual Error   289  63654    220
Total            290  87942

Unusual Observations
Obs  NWNTHM06_2  ORAM_V5     Fit  SE Fit  Residual  St Resid
 84          -3   26.000  56.273   0.901   -30.273     -2.04R
101          89   33.000  71.299   1.478   -38.299     -2.59R
128          75   39.000  69.120   1.316   -30.120     -2.04R
140          21   91.000  60.294   0.882    30.706      2.07R
141         -12   91.000  54.837   0.946    36.163      2.44R
214          46   31.000  64.282   1.017   -33.282     -2.25R
231          52   33.000  65.367   1.074   -32.367     -2.19R
284          68   24.000  67.930   1.233   -43.930     -2.97R
286          76   38.000  69.266   1.327   -31.266     -2.12R

R denotes an observation with a large standardized residual.
```

Figure A125. Scatterplot and regression analysis of ORAM score versus percent parkland for area within 100 meters of assessment boundary.



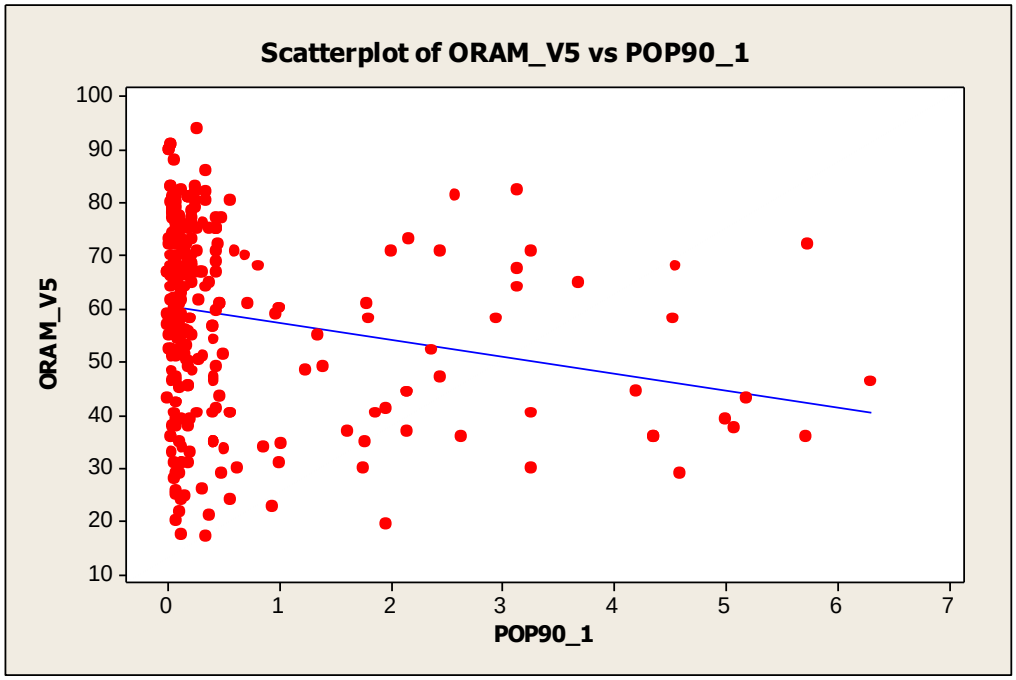

```
The regression equation is
ORAM_V5 = 54.7 + 0.0872 PARK_1

Predictor      Coef  SE Coef      T      P
Constant     54.686    1.412  38.74  0.000
PARK_1      0.08716  0.02148   4.06  0.000

S = 16.9676   R-Sq = 5.4%   R-Sq(adj) = 5.1%

Analysis of Variance
Source            DF       SS      MS      F      P
Regression         1   4739.2  4739.2  16.46  0.000
Residual Error   289  83203.0   287.9
Total            290  87942.2

Unusual Observations
Obs  PARK_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
130       0   19.500  54.686   1.412   -35.186     -2.08R
143       0   17.000  54.686   1.412   -37.686     -2.23R
159       0   17.500  54.686   1.412   -37.186     -2.20R
258       0   20.000  54.686   1.412   -34.686     -2.05R
271     100   29.000  63.402   1.518   -34.402     -2.04R
284     100   24.000  63.385   1.515   -39.385     -2.33R
287     100   25.000  63.402   1.518   -38.402     -2.27R

R denotes an observation with a large standardized residual.
```

Figure A126. Scatterplot and regression analysis of ORAM score versus percent parkland for area from 100 to 350 meters of assessment boundary.



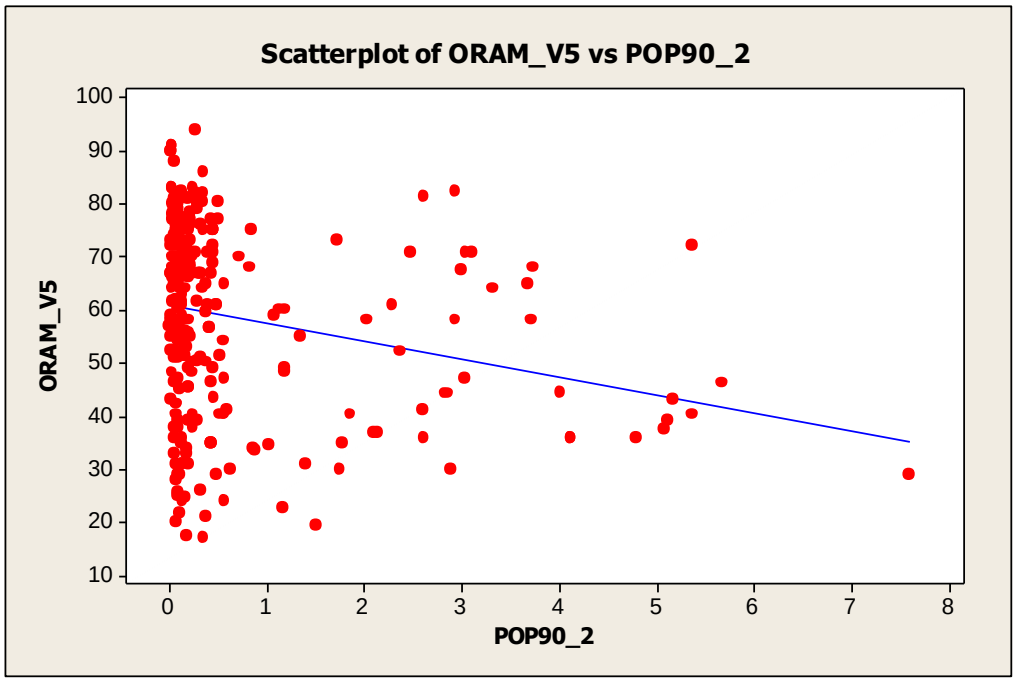

```
The regression equation is
ORAM_V5 = 55.4 + 0.0941 PARK_2

Predictor      Coef  SE Coef      T      P
Constant     55.416    1.360  40.76  0.000
PARK_2      0.09409  0.02599   3.62  0.000

S = 17.0615   R-Sq = 4.3%   R-Sq(adj) = 4.0%

Analysis of Variance
Source            DF       SS      MS      F      P
Regression         1   3816.2  3816.2  13.11  0.000
Residual Error   289  84126.0   291.1
Total            290  87942.2

Unusual Observations
Obs  PARK_2  ORAM_V5    Fit  SE Fit  Residual  St Resid
 31       0    21.00  55.42    1.36    -34.42     -2.02R
118      47    94.00  59.80    1.04     34.20      2.01R
130       0    19.50  55.42    1.36    -35.92     -2.11R
143       0    17.00  55.42    1.36    -38.42     -2.26R
159       0    17.50  55.42    1.36    -37.92     -2.23R
258       0    20.00  55.42    1.36    -35.42     -2.08R
271      97    29.00  64.54    1.89    -35.54     -2.10R
284      79    24.00  62.81    1.50    -38.81     -2.28R
287      99    25.00  64.72    1.93    -39.72     -2.34R

R denotes an observation with a large standardized residual.
```

Figure A127. Scatterplot and regression analysis of ORAM score versus 1990 population density for area within 100 meters of assessment boundary.



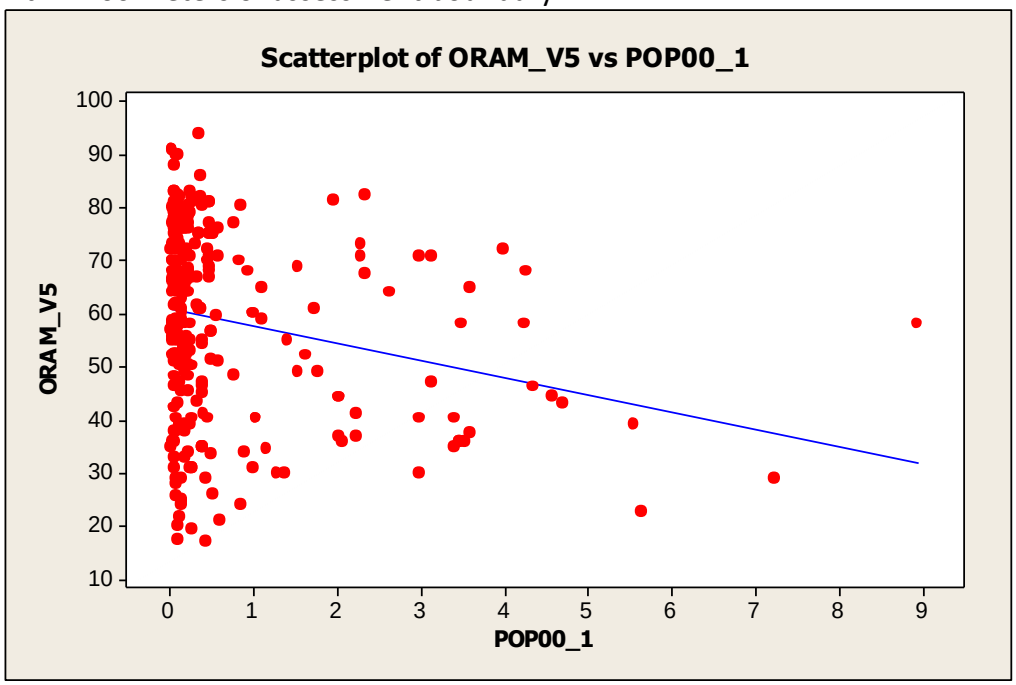

```
The regression equation is
ORAM_V5 = 60.7 - 3.23 POP90_1

Predictor      Coef  SE Coef       T      P
Constant     60.733    1.134  53.58  0.000
POP90_1     -3.2307   0.8727  -3.70  0.000

S = 17.0447   R-Sq = 4.5%   R-Sq(adj) = 4.2%

Analysis of Variance
Source            DF       SS      MS      F      P
Regression         1   3981.3  3981.3  13.70  0.000
Residual Error   289  83960.9   290.5
Total            290  87942.2

Unusual Observations
Obs  POP90_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
 11     3.27   71.000  50.179   2.522    20.821     1.24 X
 12     3.69   65.000  48.815   2.864    16.185     0.96 X
 21     0.17   24.500  60.188   1.072   -35.688    -2.10R
 23     5.18   43.000  44.000   4.108    -1.000    -0.06 X
 31     0.37   21.000  59.525   1.021   -38.525    -2.26R
 35     5.72   36.000  42.261   4.565    -6.261    -0.38 X
 58     0.95   22.500  57.667   1.041   -35.167    -2.07R
 67     5.07   37.500  44.343   4.018    -6.843    -0.41 X
 82     4.35   36.000  46.668   3.413   -10.668    -0.64 X
 83     4.35   36.000  46.668   3.413   -10.668    -0.64 X
118     0.28   94.000  59.837   1.041    34.163     2.01R
130     1.97   19.500  54.373   1.548   -34.873    -2.05R
133     0.57   24.000  58.885   1.000   -34.885    -2.05R
143     0.35   17.000  59.591   1.025   -42.591    -2.50R
159     0.13   17.500  60.319   1.085   -42.819    -2.52R
185     3.27   40.000  50.179   2.522   -10.179    -0.60 X
197     4.53   58.000  46.098   3.561    11.902     0.71 X
198     4.55   68.000  46.020   3.581    21.980     1.32 X
200     5.73   72.000  42.235   4.572    29.765     1.81 X
201     6.30   46.000  40.389   5.060     5.611     0.34 X
207     3.27   30.000  50.179   2.522   -20.179    -1.20 X
226     4.99   39.000  44.598   3.952    -5.598    -0.34 X
232     4.60   29.000  45.880   3.618   -16.880    -1.01 X
253     0.09   25.500  60.451   1.100   -34.951    -2.05R
258     0.08   20.000  60.478   1.103   -40.478    -2.38R
263     4.20   44.500  47.155   3.288    -2.655    -0.16 X
269     0.11   21.500  60.368   1.091   -38.868    -2.29R
284     0.14   24.000  60.295   1.083   -36.295    -2.13R
287     0.09   25.000  60.440   1.098   -35.440    -2.08R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A128. Scatterplot and regression analysis of ORAM score versus 1990 population density for area from 100 to 350 meters of assessment boundary.



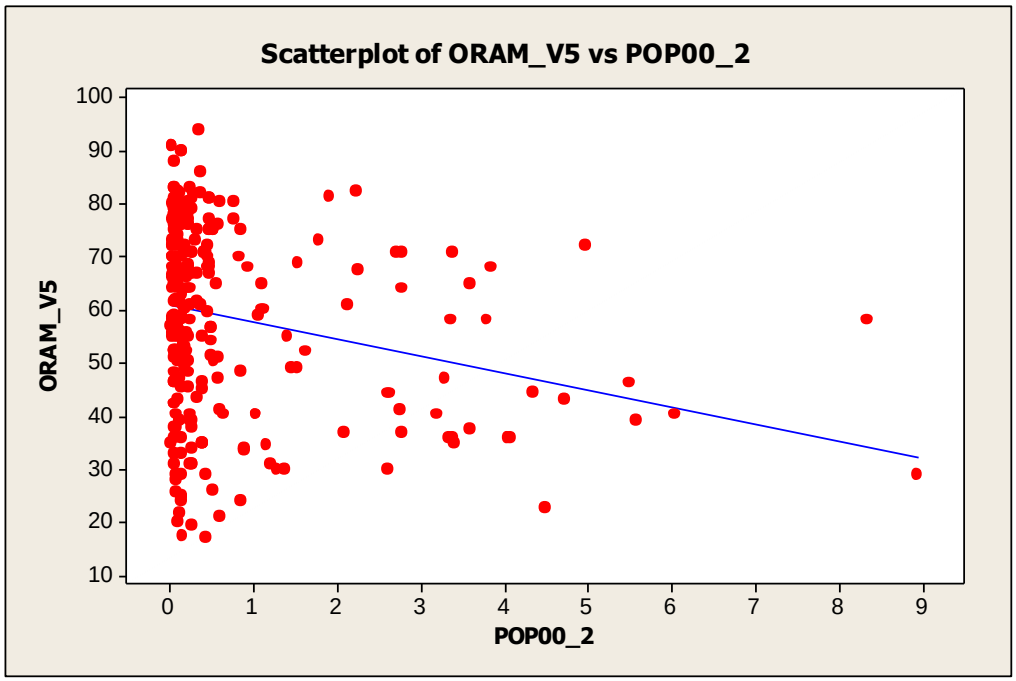

```
The regression equation is
ORAM_V5 = 60.9 - 3.39 POP90_2

Predictor      Coef  SE Coef      T      P
Constant     60.915    1.130  53.90  0.000
POP90_2     -3.3949   0.8407  -4.04  0.000

S = 16.9719   R-Sq = 5.3%   R-Sq(adj) = 5.0%

Analysis of Variance
Source            DF       SS      MS      F      P
Regression         1   4697.3  4697.3  16.31  0.000
Residual Error   289  83244.8   288.0
Total            290  87942.2

Unusual Observations
Obs  POP90_2  ORAM_V5     Fit  SE Fit  Residual  St Resid
 12     3.69   65.000  48.391   2.751    16.609     0.99 X
 21     0.17   24.500  60.343   1.070   -35.843    -2.12R
 23     5.17   43.000  43.355   3.940    -0.355    -0.02 X
 31     0.37   21.000  59.646   1.019   -38.646    -2.28R
 35     4.79   36.000  44.663   3.628    -8.663    -0.52 X
 58     1.17   22.500  56.931   1.092   -34.431    -2.03R
 67     5.07   37.500  43.693   3.859    -6.193    -0.37 X
 82     4.14   36.000  46.874   3.105   -10.874    -0.65 X
 83     4.14   36.000  46.871   3.106   -10.871    -0.65 X
 92     3.32   64.000  49.636   2.467    14.364     0.86 X
118     0.28   94.000  59.974   1.040    34.026     2.01R
130     1.51   19.500  55.784   1.237   -36.284    -2.14R
133     0.57   24.000  58.973   0.996   -34.973    -2.06R
143     0.35   17.000  59.716   1.023   -42.716    -2.52R
159     0.17   17.500  60.330   1.069   -42.830    -2.53R
185     5.36   40.000  42.705   4.096    -2.705    -0.16 X
197     3.71   58.000  48.319   2.768     9.681     0.58 X
198     3.73   68.000  48.253   2.783    19.747     1.18 X
200     5.36   72.000  42.719   4.093    29.281     1.78 X
201     5.67   46.000  41.670   4.345     4.330     0.26 X
226     5.11   39.000  43.557   3.892    -4.557    -0.28 X
232     7.60   29.000  35.108   5.939    -6.108    -0.38 X
253     0.09   25.500  60.620   1.097   -35.120    -2.07R
258     0.08   20.000  60.642   1.100   -40.642    -2.40R
263     4.03   44.500  47.246   3.018    -2.746    -0.16 X
269     0.11   21.500  60.532   1.088   -39.032    -2.30R
284     0.14   24.000  60.455   1.081   -36.455    -2.15R
287     0.10   25.000  60.592   1.094   -35.592    -2.10R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A129. Scatterplot and regression analysis of ORAM score versus 2000 population density for area within 100 meters of assessment boundary.



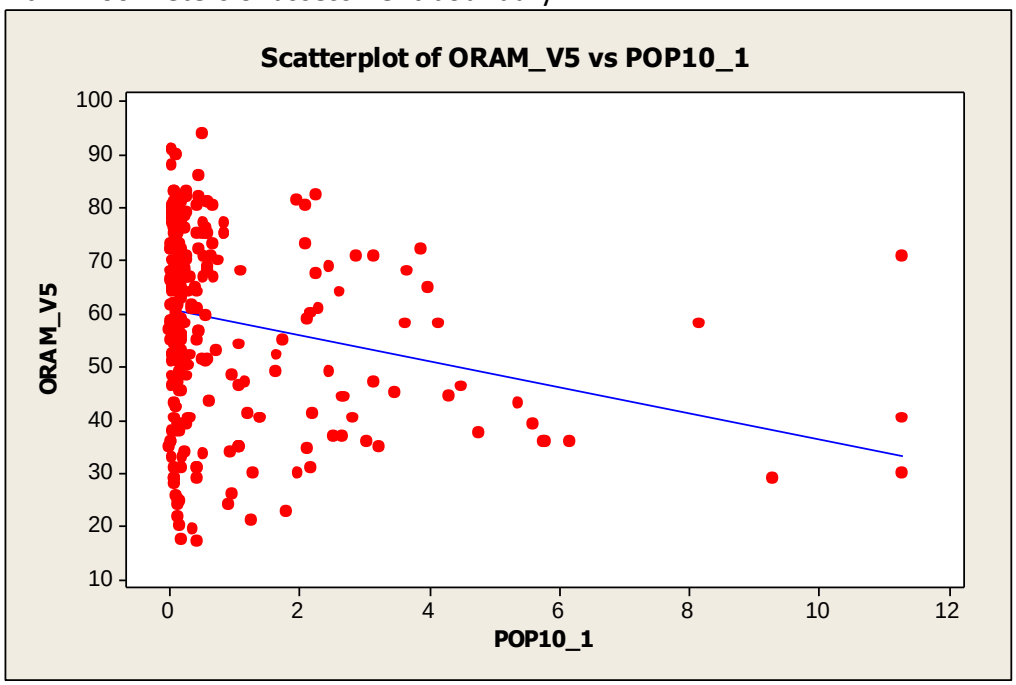

```
The regression equation is: ORAM_V5 = 60.9 - 3.23 POP00_1

Predictor      Coef  SE Coef      T      P
Constant     60.899    1.136  53.61  0.000
POP00_1     -3.2288   0.8203  -3.94  0.000

S = 16.9946   R-Sq = 5.1%   R-Sq(adj) = 4.8%

Analysis of Variance
Source            DF       SS      MS      F      P
Regression         1   4474.3  4474.3  15.49  0.000
Residual Error   289  83467.8   288.8
Total            290  87942.2

Unusual Observations
Obs  POP00_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
 12     3.59   65.000  49.293   2.601    15.707     0.94 X
 21     0.16   24.500  60.382   1.079   -35.882    -2.12R
 23     4.70   43.000  45.734   3.454    -2.734    -0.16 X
 31     0.61   21.000  58.925   0.997   -37.925    -2.24R
 39     3.49   58.000  49.640   2.520     8.360     0.50 X
 47     3.40   35.000  49.930   2.453   -14.930    -0.89 X
 58     5.63   22.500  42.717   4.194   -20.217    -1.23 X
 67     3.59   37.500  49.298   2.600   -11.798    -0.70 X
 82     3.46   36.000  49.724   2.501   -13.724    -0.82 X
 83     3.46   36.000  49.724   2.501   -13.724    -0.82 X
118     0.35   94.000  59.771   1.029    34.229     2.02R
130     0.28   19.500  60.002   1.046   -40.502    -2.39R
133     0.86   24.000  58.113   1.009   -34.113    -2.01R
143     0.43   17.000  59.504   1.014   -42.504    -2.51R
159     0.10   17.500  60.566   1.098   -43.066    -2.54R
197     4.24   58.000  47.195   3.100    10.805     0.65 X
198     4.26   68.000  47.149   3.111    20.851     1.25 X
200     3.98   72.000  48.044   2.897    23.956     1.43 X
201     4.33   46.000  46.903   3.171    -0.903    -0.05 X
216     3.40   40.000  49.930   2.453    -9.930    -0.59 X
224     3.53   36.000  49.514   2.550   -13.514    -0.80 X
226     5.57   39.000  42.924   4.143    -3.924    -0.24 X
232     7.24   29.000  37.525   5.484    -8.525    -0.53 X
235     8.95   58.000  31.997   6.870    26.003     1.67 X
253     0.08   25.500  60.639   1.106   -35.139    -2.07R
258     0.09   20.000  60.600   1.101   -40.600    -2.39R
263     4.57   44.500  46.135   3.357    -1.635    -0.10 X
269     0.12   21.500  60.499   1.091   -38.999    -2.30R
284     0.14   24.000  60.454   1.086   -36.454    -2.15R
287     0.14   25.000  60.441   1.085   -35.441    -2.09R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A130. Scatterplot and regression analysis of ORAM score versus 2000 population density for area from 100 to 350 meters of assessment boundary.



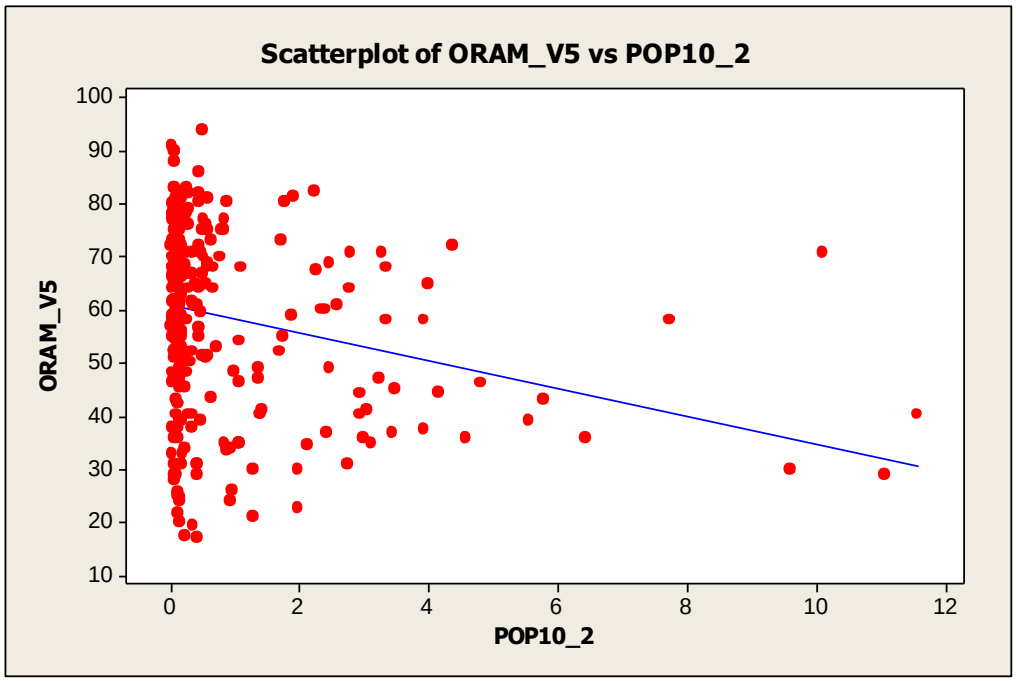

```
The regression equation is
ORAM_V5 = 61.0 - 3.20 POP00_2

Predictor      Coef  SE Coef      T      P
Constant     61.002    1.131  53.93  0.000
POP00_2     -3.1983   0.7689  -4.16  0.000

S = 16.9444   R-Sq = 5.6%   R-Sq(adj) = 5.3%

Analysis of Variance
Source            DF       SS      MS      F      P
Regression         1   4967.1  4967.1  17.30  0.000
Residual Error   289  82975.1   287.1
Total            290  87942.2

Unusual Observations
Obs   POP00_2  ORAM_V5     Fit  SE Fit  Residual  St Resid
 12      3.59   65.000  49.506   2.434    15.494      0.92 X
 21      0.16   24.500  60.490   1.078   -35.990     -2.13R
 23      4.71   43.000  45.927   3.239    -2.927     -0.18 X
 31      0.61   21.000  59.047   0.996   -38.047     -2.25R
 58      4.48   22.500  46.663   3.071   -24.163     -1.45 X
 67      3.59   37.500  49.510   2.434   -12.010     -0.72 X
 82      4.06   36.000  48.007   2.768   -12.007     -0.72 X
 83      4.06   36.000  48.022   2.764   -12.022     -0.72 X
118      0.35   94.000  59.885   1.030    34.115      2.02R
130      0.26   19.500  60.167   1.050   -40.667     -2.40R
133      0.86   24.000  58.243   1.001   -34.243     -2.02R
143      0.43   17.000  59.621   1.015   -42.621     -2.52R
159      0.16   17.500  60.496   1.078   -42.996     -2.54R
185      6.04   40.000  41.675   4.224    -1.675     -0.10 X
197      3.80   58.000  48.840   2.582     9.160      0.55 X
198      3.85   68.000  48.703   2.612    19.297      1.15 X
200      4.98   72.000  45.082   3.433    26.918      1.62 X
201      5.49   46.000  43.444   3.812     2.556      0.15 X
226      5.58   39.000  43.154   3.879    -4.154     -0.25 X
232      8.95   29.000  32.364   6.421    -3.364     -0.21 X
235      8.35   58.000  34.294   5.963    23.706      1.49 X
253      0.08   25.500  60.744   1.103   -35.244     -2.08R
258      0.09   20.000  60.700   1.098   -40.700     -2.41R
263      4.35   44.500  47.102   2.971    -2.602     -0.16 X
269      0.12   21.500  60.606   1.089   -39.106     -2.31R
284      0.14   24.000  60.561   1.084   -36.561     -2.16R
287      0.14   25.000  60.549   1.083   -35.549     -2.10R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A131. Scatterplot and regression analysis of ORAM score versus 2010 population density for area within 100 meters of assessment boundary.



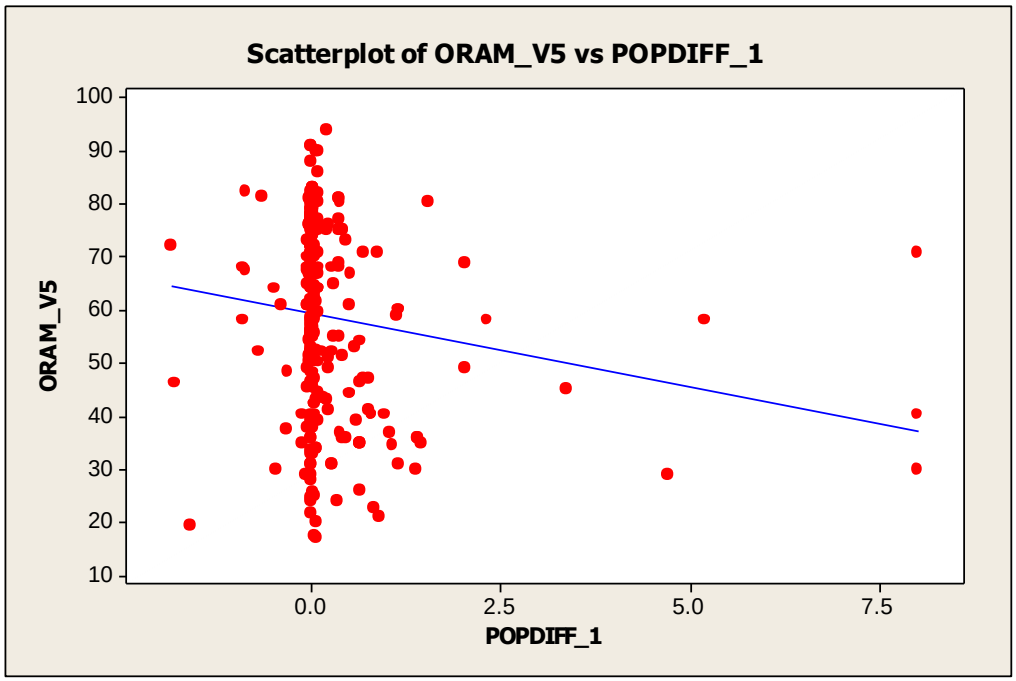

```
The regression equation is
ORAM_V5 = 60.9 - 2.45 POP10_1

Predictor      Coef  SE Coef      T      P
Constant     60.880    1.116  54.57  0.000
POP10_1     -2.4452   0.5843  -4.19  0.000

S = 16.9384   R-Sq = 5.7%   R-Sq(adj) = 5.4%

Analysis of Variance
Source            DF       SS      MS      F      P
Regression         1   5025.3  5025.3  17.52  0.000
Residual Error   289  82916.9   286.9
Total            290  87942.2

Unusual Observations
Obs  POP10_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
 11     11.3   71.000  33.315   6.158    37.685     2.39RX
 21      0.2   24.500  60.491   1.077   -35.991    -2.13R
 23      5.4   43.000  47.702   2.821    -4.702    -0.28 X
 31      1.3   21.000  57.762   1.021   -36.762    -2.17R
 35      6.2   36.000  45.781   3.254    -9.781    -0.59 X
 58      1.8   22.500  56.502   1.129   -34.002    -2.01R
 67      4.8   37.500  49.247   2.478   -11.747    -0.70 X
 82      5.8   36.000  46.776   3.029   -10.776    -0.65 X
 83      5.8   36.000  46.760   3.032   -10.760    -0.65 X
118      0.5   94.000  59.666   1.017    34.334     2.03R
130      0.4   19.500  59.955   1.034   -40.455    -2.39R
133      0.9   24.000  58.627   0.993   -34.627    -2.05R
143      0.4   17.000  59.844   1.027   -42.844    -2.53R
159      0.2   17.500  60.423   1.070   -42.923    -2.54R
185     11.3   40.000  33.277   6.167     6.723     0.43 X
207     11.3   30.000  33.315   6.158    -3.315    -0.21 X
226      5.6   39.000  47.184   2.937    -8.184    -0.49 X
232      9.3   29.000  38.136   5.025    -9.136    -0.56 X
235      8.2   58.000  40.936   4.371    17.064     1.04 X
253      0.1   25.500  60.598   1.087   -35.098    -2.08R
258      0.1   20.000  60.522   1.079   -40.522    -2.40R
269      0.1   21.500  60.580   1.085   -39.080    -2.31R
284      0.1   24.000  60.531   1.080   -36.531    -2.16R
287      0.1   25.000  60.557   1.083   -35.557    -2.10R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A132. Scatterplot and regression analysis of ORAM score versus 2010 population density for area from 100 to 350 meters of assessment boundary.



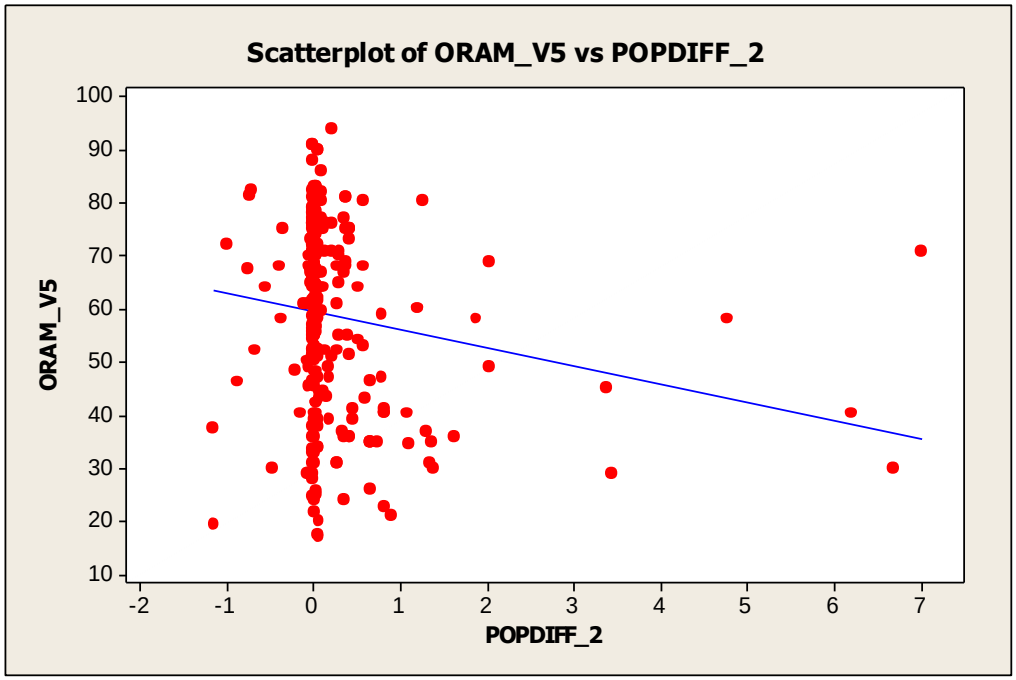

```
The regression equation is
ORAM_V5 = 61.1 - 2.62 POP10_2

Predictor      Coef  SE Coef       T      P
Constant     61.058    1.120   54.54  0.000
POP10_2     -2.6246   0.5952   -4.41  0.000

S = 16.8854   R-Sq = 6.3%   R-Sq(adj) = 6.0%

Analysis of Variance
Source            DF       SS       MS      F      P
Regression         1   5543.8   5543.8  19.44  0.000
Residual Error   289  82398.4    285.1
Total            290  87942.2

Unusual Observations
Obs  POP10_2  ORAM_V5     Fit  SE Fit  Residual  St Resid
 11     10.1   71.000  34.541   5.579    36.459     2.29RX
 21      0.2   24.500  60.640   1.079   -36.140    -2.14R
 23      5.8   43.000  45.902   3.077    -2.902    -0.17 X
 31      1.3   21.000  57.710   1.018   -36.710    -2.18R
 35      6.4   36.000  44.198   3.446    -8.198    -0.50 X
118      0.5   94.000  59.754   1.016    34.246     2.03R
130      0.4   19.500  60.079   1.035   -40.579    -2.41R
133      0.9   24.000  58.638   0.990   -34.638    -2.05R
143      0.4   17.000  59.946   1.026   -42.946    -2.55R
159      0.2   17.500  60.470   1.064   -42.970    -2.55R
185     11.6   40.000  30.686   6.441     9.314     0.60 X
201      4.8   46.000  48.483   2.530    -2.483    -0.15 X
207      9.6   30.000  35.919   5.272    -5.919    -0.37 X
226      5.6   39.000  46.454   2.959    -7.454    -0.45 X
232     11.1   29.000  32.055   6.135    -3.055    -0.19 X
235      7.7   58.000  40.765   4.197    17.235     1.05 X
253      0.1   25.500  60.736   1.087   -35.236    -2.09R
258      0.2   20.000  60.644   1.079   -40.644    -2.41R
269      0.1   21.500  60.735   1.087   -39.235    -2.33R
284      0.1   24.000  60.683   1.082   -36.683    -2.18R
287      0.1   25.000  60.710   1.085   -35.710    -2.12R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A133. Scatterplot and regression analysis of ORAM score versus difference between 1990 and 2010 population densities for area within 100 meters of assessment boundary.



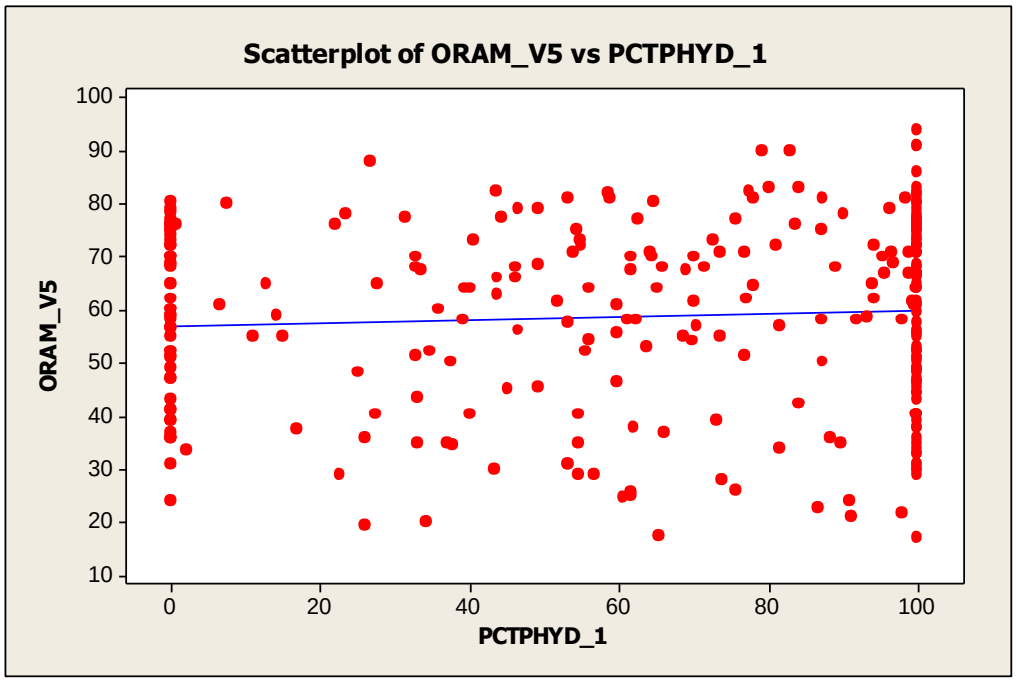

```
The regression equation is
ORAM_V5 = 59.5 - 2.79 POPDIFF_1

Predictor     Coef  SE Coef      T      P
Constant    59.470    1.042  57.09  0.000
POPDIFF_1   -2.794    1.003  -2.79  0.006

S = 17.2146   R-Sq = 2.6%   R-Sq(adj) = 2.3%

Analysis of Variance
Source            DF       SS      MS     F      P
Regression         1   2298.8  2298.8  7.76  0.006
Residual Error   289  85643.3   296.3
Total            290  87942.2

Unusual Observations
Obs  POPDIFF_1  ORAM_V5    Fit  SE Fit  Residual  St Resid
 11       8.01    71.00  37.10    7.84     33.90     2.21RX
 21      -0.01    24.50  59.50    1.04    -35.00    -2.04R
 31       0.90    21.00  56.95    1.20    -35.95    -2.09R
 58       0.84    22.50  57.12    1.17    -34.62    -2.02R
118       0.22    94.00  58.86    1.01     35.14     2.05R
130      -1.59    19.50  63.91    2.11    -44.41    -2.60R
133       0.35    24.00  58.49    1.01    -34.49    -2.01R
143       0.07    17.00  59.27    1.03    -42.27    -2.46R
154       3.37    45.00  50.05    3.28     -5.05    -0.30 X
159       0.06    17.50  59.30    1.03    -41.80    -2.43R
185       8.02    40.00  37.06    7.85      2.94     0.19 X
207       8.01    30.00  37.10    7.84     -7.10    -0.46 X
232       4.70    29.00  46.33    4.57    -17.33    -1.04 X
235       5.21    58.00  44.92    5.07     13.08     0.79 X
258       0.07    20.00  59.28    1.03    -39.28    -2.29R
269       0.01    21.50  59.44    1.04    -37.94    -2.21R
284       0.01    24.00  59.45    1.04    -35.45    -2.06R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A134. Scatterplot and regression analysis of ORAM score versus difference between 1990 and 2010 population densities for area from 100 to 350 meters of assessment boundary.



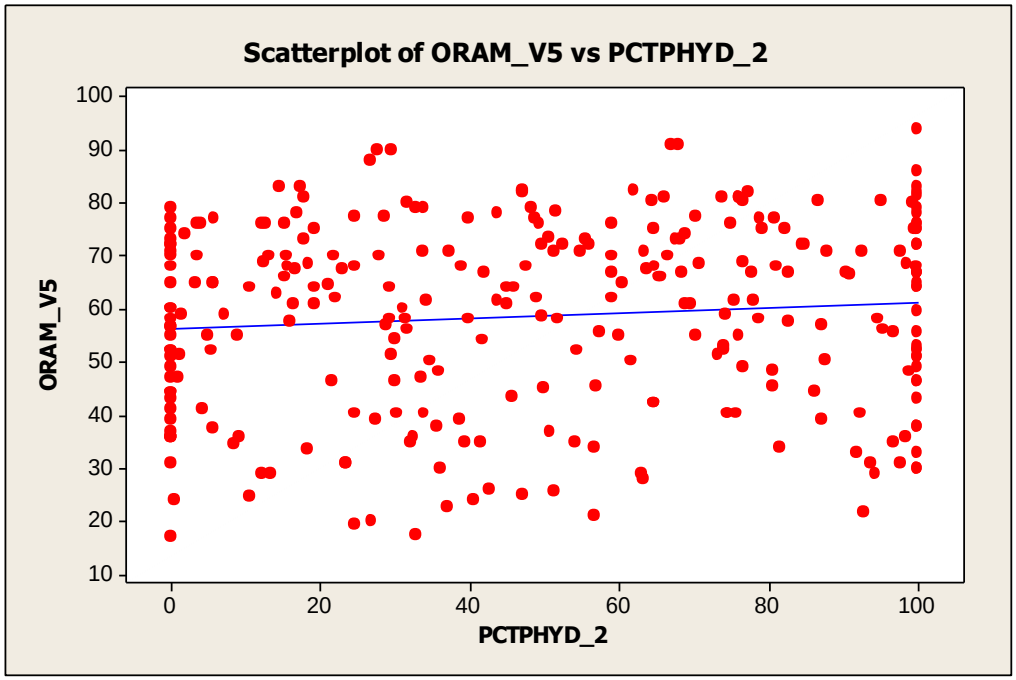

```
The regression equation is
ORAM_V5 = 59.6 - 3.44 POPDIFF_2

Predictor     Coef  SE Coef      T      P
Constant    59.581    1.047  56.88  0.000
POPDIFF_2   -3.442    1.182  -2.91  0.004

S = 17.1936   R-Sq = 2.9%   R-Sq(adj) = 2.5%

Analysis of Variance
Source            DF       SS      MS     F      P
Regression         1   2507.9  2507.9  8.48  0.004
Residual Error   289  85434.3   295.6
Total            290  87942.2

Unusual Observations
Obs  POPDIFF_2  ORAM_V5    Fit  SE Fit  Residual  St Resid
 11       7.00    71.00  35.47    8.06     35.53     2.34RX
 21      -0.01    24.50  59.61    1.05    -35.11    -2.05R
 31       0.90    21.00  56.48    1.27    -35.48    -2.07R
118       0.22    94.00  58.83    1.01     35.17     2.05R
130      -1.14    19.50  63.50    1.92    -44.00    -2.58R
133       0.35    24.00  58.38    1.02    -34.38    -2.00R
143       0.07    17.00  59.34    1.03    -42.34    -2.47R
154       3.37    45.00  47.97    3.84     -2.97    -0.18 X
159       0.05    17.50  59.40    1.03    -41.90    -2.44R
185       6.21    40.00  38.21    7.12      1.79     0.11 X
207       6.69    30.00  36.55    7.69     -6.55    -0.43 X
232       3.45    29.00  47.71    3.92    -18.71    -1.12 X
235       4.78    58.00  43.12    5.46     14.88     0.91 X
258       0.08    20.00  59.32    1.03    -39.32    -2.29R
269       0.01    21.50  59.55    1.04    -38.05    -2.22R
284       0.01    24.00  59.56    1.05    -35.56    -2.07R
287       0.04    25.00  59.45    1.04    -34.45    -2.01R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A135. Scatterplot and regression analysis of ORAM score versus percent hydric soils for area within 100 meters of assessment boundary.



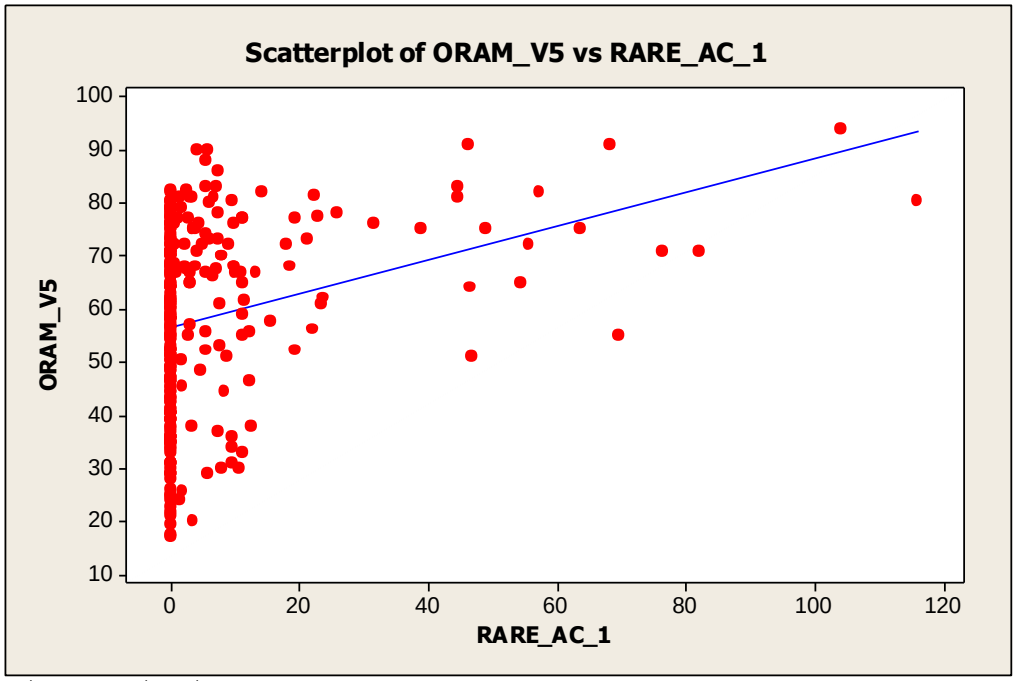

```
The regression equation is
ORAM_V5 = 56.9 + 0.0293 PCTPHYD_1

Predictor      Coef  SE Coef      T      P
Constant     56.888    2.000  28.45  0.000
PCTPHYD_1   0.02930  0.02705   1.08  0.280

S = 17.4088   R-Sq = 0.4%   R-Sq(adj) = 0.1%

Analysis of Variance
Source            DF       SS     MS     F      P
Regression         1    355.5  355.5  1.17  0.280
Residual Error   289  87586.6  303.1
Total            290  87942.2

Unusual Observations
Obs  PCTPHYD_1  ORAM_V5    Fit  SE Fit  Residual  St Resid
 31         91    21.00  59.56    1.26    -38.56    -2.22R
 58         87    22.50  59.42    1.20    -36.92    -2.13R
130         26    19.50  57.65    1.44    -38.15    -2.20R
133         91    24.00  59.55    1.26    -35.55    -2.05R
143        100    17.00  59.82    1.42    -42.82    -2.47R
159         65    17.50  58.80    1.02    -41.30    -2.38R
258         34    20.00  57.89    1.29    -37.89    -2.18R
269         98    21.50  59.75    1.38    -38.25    -2.20R

R denotes an observation with a large standardized residual.
```

Figure A136. Scatterplot and regression analysis of ORAM score versus percent hydric soils for area from 100 to 350 meters of assessment boundary.



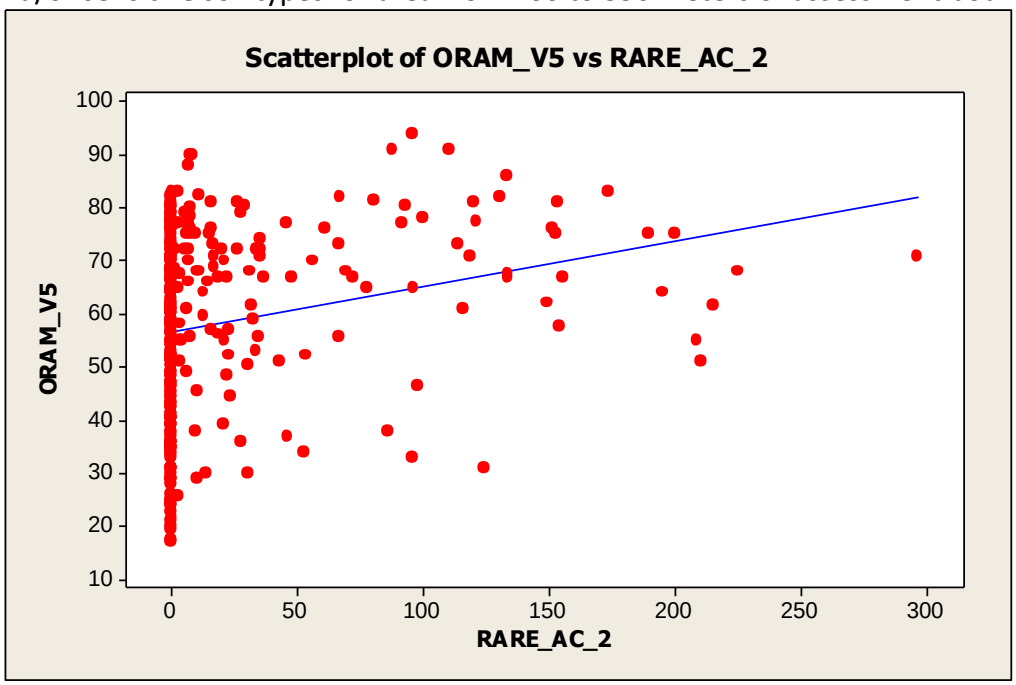

```
The regression equation is
ORAM_V5 = 56.4 + 0.0475 PCTPHYD_2

Predictor      Coef  SE Coef      T      P
Constant     56.393    1.787  31.56  0.000
PCTPHYD_2   0.04746  0.02955   1.61  0.109

S = 17.3668   R-Sq = 0.9%   R-Sq(adj) = 0.5%

Analysis of Variance
Source            DF       SS     MS     F      P
Regression         1    777.9  777.9  2.58  0.109
Residual Error   289  87164.3  301.6
Total            290  87942.2

Unusual Observations
Obs  PCTPHYD_2  ORAM_V5    Fit  SE Fit  Residual  St Resid
 31         57    21.00  59.09    1.04    -38.09    -2.20R
 58         37    22.50  58.15    1.08    -35.65    -2.06R
130         25    19.50  57.56    1.26    -38.06    -2.20R
143          0    17.00  56.39    1.79    -39.39    -2.28R
159         33    17.50  57.95    1.13    -40.45    -2.33R
258         27    20.00  57.67    1.22    -37.67    -2.17R
269         93    21.50  60.79    1.63    -39.29    -2.27R

R denotes an observation with a large standardized residual.
```

Figure A137. Scatterplot and regression analysis of ORAM score versus presence of rare plant species and/or sensitive soil types for area within 100 meters of assessment boundary.




```
The regression equation is
ORAM_V5 = 56.7 + 0.317 RARE_AC_1

Predictor      Coef  SE Coef      T      P
Constant     56.703    1.057  53.64  0.000
RARE_AC_1   0.31729  0.06183   5.13  0.000

S = 16.6999   R-Sq = 8.4%   R-Sq(adj) = 8.0%

Analysis of Variance
Source            DF       SS      MS      F      P
Regression         1   7343.8  7343.8  26.33  0.000
Residual Error   289  80598.4   278.9
Total            290  87942.2

Unusual Observations
Obs  RARE_AC_1  ORAM_V5     Fit  SE Fit  Residual  St Resid
 31          0   21.000  56.703   1.057   -35.703     -2.14R
 58          0   22.500  56.703   1.057   -34.203     -2.05R
 79         45   81.000  70.874   2.557    10.126      0.61 X
 81        116   80.500  93.565   6.855   -13.065     -0.86 X
 90         47   64.000  71.506   2.672    -7.506     -0.46 X
 94         76   71.000  80.923   4.430    -9.923     -0.62 X
 99         64   75.000  76.905   3.671    -1.905     -0.12 X
106         56   72.000  74.375   3.198    -2.375     -0.14 X
117         70   55.000  78.759   4.020   -23.759     -1.47 X
118        104   94.000  89.749   6.120     4.251      0.27 X
130          0   19.500  56.703   1.057   -37.203     -2.23R
139         55   65.000  74.012   3.131    -9.012     -0.55 X
140         46   91.000  71.409   2.654    19.591      1.19 X
141         68   91.000  78.360   3.945    12.640      0.78 X
143          0   17.000  56.703   1.057   -39.703     -2.38R
156         82   71.000  82.778   4.783   -11.778     -0.74 X
159          0   17.500  56.703   1.057   -39.203     -2.35R
160         49   75.000  72.212   2.800     2.788      0.17 X
181         57   82.000  74.897   3.295     7.103      0.43 X
188         47   51.000  71.539   2.677   -20.539     -1.25 X
229         45   83.000  70.828   2.549    12.172      0.74 X
258          4   20.000  57.891   0.993   -37.891     -2.27R
269          0   21.500  56.703   1.057   -35.203     -2.11R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Figure A138. Scatterplot and regression analysis of ORAM score versus presence of rare plant species and/or sensitive soil types for area from 100 to 350 meters of assessment boundary.




```
The regression equation is
ORAM_V5 = 56.6 + 0.0856 RARE_AC_2

Predictor      Coef  SE Coef      T      P
Constant     56.646    1.107  51.17  0.000
RARE_AC_2   0.08559  0.02000   4.28  0.000

S = 16.9165   R-Sq = 6.0%   R-Sq(adj) = 5.6%

Analysis of Variance
Source            DF       SS      MS      F      P
Regression         1   5239.4  5239.4  18.31  0.000
Residual Error   289  82702.8   286.2
Total            290  87942.2

Unusual Observations
Obs  RARE_AC_2  ORAM_V5     Fit  SE Fit  Residual  St Resid
 27        149   62.000  69.424   2.684    -7.424     -0.44 X
 31          0   21.000  56.646   1.107   -35.646     -2.11R
 58          0   22.500  56.646   1.107   -34.146     -2.02R
 79        154   81.000  69.810   2.768    11.190      0.67 X
 90        195   64.000  73.348   3.553    -9.348     -0.57 X
 94        297   71.000  82.059   5.537   -11.059     -0.69 X
 99        200   75.000  73.762   3.646     1.238      0.07 X
100        190   75.000  72.873   3.446     2.127      0.13 X
117        209   55.000  74.553   3.824   -19.553     -1.19 X
130          0   19.500  56.646   1.107   -37.146     -2.20R
137        155   57.500  69.885   2.785   -12.385     -0.74 X
142        156   67.000  69.971   2.803    -2.971     -0.18 X
143          0   17.000  56.646   1.107   -39.646     -2.35R
149        215   61.500  75.073   3.941   -13.573     -0.83 X
159          0   17.500  56.646   1.107   -39.146     -2.32R
160        153   75.000  69.760   2.757     5.240      0.31 X
164        151   76.000  69.605   2.724     6.395      0.38 X
188        210   51.000  74.654   3.847   -23.654     -1.44 X
229        174   83.000  71.536   3.148    11.464      0.69 X
230        225   68.000  75.906   4.130    -7.906     -0.48 X
258          0   20.000  56.646   1.107   -36.646     -2.17R
266        125   31.000  67.321   2.235   -36.321     -2.17R
269          1   21.500  56.711   1.100   -35.211     -2.09R

R denotes an observation with a large standardized residual.
X denotes an observation whose X value gives it large leverage.
```

Appendix 2

Ohio's HUC 12 watersheds with wetland assessment information

Metric scoring ranges for parameters included in the Ohio EPA level 1 wetland assessment .

HUC12	HUC12 Name	Historic Wetland %	Curent Wetland %	Wetland Loss %	Number of NWI Wetlands	Area-Weighted Level 1 Score	Number of ORAM Assessments	Mean ORAM Score	Number of VIBI Assessments	Mean VIBI Score	Number of VIBI-FQ Assessments	Mean VIBI-FQ Score
041000010301	Shantee Creek	20.67	0.08	99.59	3	20.27	0	0.00	0	0.00	0	0.00
041000010302	Halfway Creek	26.83	1.29	95.18	6	13.93	0	0.00	0	0.00	0	0.00
041000010303	Prairie Ditch	64.66	5.66	91.24	74	72.32	2	78.50	1	93.00	1	100.00
041000010304	Headwaters Tenmile Creek	61.77	1.02	98.35	61	48.81	0	0.00	0	0.00	0	0.00
041000010305	North Tenmile Creek	31.15	1.13	96.37	4	22.08	0	0.00	0	0.00	0	0.00
041000010306	Tenmile Creek	36.67	1.88	94.87	18	46.64	0	0.00	0	0.00	0	0.00
041000010307	Heldman Ditch-Ottawa River	29.25	2.26	92.28	68	55.06	4	62.75	4	65.75	4	66.75
041000010308	Sibley Creek-Ottawa River	15.54	1.00	93.58	22	25.74	0	0.00	0	0.00	0	0.00
041000010309	Detwiler Ditch-Frontal Lake Erie	15.78	3.56	77.46	22	18.90	0	0.00	0	0.00	0	0.00
041000020301	Headwaters Bear Creek	42.58	2.61	93.87	111	49.14	0	0.00	0	0.00	0	0.00
041000020303	Nile Ditch	40.28	1.45	96.40	6	50.19	0	0.00	0	0.00	0	0.00
041000020304	Little Bear Creek-Bear Creek	56.72	0.47	99.17	16	35.87	0	0.00	0	0.00	0	0.00
041000030104	Bird Creek-East Branch Saint Joseph River	19.33	8.00	58.59	7	59.77	0	0.00	0	0.00	0	0.00
041000030106	Clear Fork-East Branch Saint Joseph River	28.48	4.08	85.66	174	51.84	1	79.00	1	100.00	1	97.22
041000030204	Lake Da Su An-West Branch Saint Joseph River	19.17	5.90	69.25	180	61.70	0	0.00	0	0.00	0	0.00
041000030301	Nettle Creek	28.83	3.76	86.95	174	57.50	0	0.00	0	0.00	0	0.00
041000030302	Cogsworth Cemetary-Saint Joseph River	30.08	8.04	73.28	68	59.71	0	0.00	0	0.00	0	0.00
041000030303	Eagle Creek	27.70	4.24	84.68	283	55.75	0	0.00	0	0.00	0	0.00
041000030304	Village of Montpelier-Saint Joseph River	24.32	7.61	68.68	126	55.67	0	0.00	0	0.00	0	0.00
041000030305	Bear Creek	27.27	2.36	91.36	125	52.73	0	0.00	0	0.00	0	0.00
041000030306	West Buffalo Cemetary-Saint Joseph River	22.55	4.91	78.24	83	61.59	0	0.00	0	0.00	0	0.00
041000030402	Headwaters Fish Creek	29.54	5.76	80.51	133	56.93	2	91.00	2	84.00	2	93.33
041000030405	Town of Alvarado-Fish Creek	24.35	7.54	69.05	68	60.63	0	0.00	0	0.00	0	0.00
041000030406	Cornell Ditch-Fish Creek	24.19	6.43	73.42	105	49.72	0	0.00	0	0.00	0	0.00
041000030501	Bluff Run-Saint Joseph River	26.70	4.28	83.97	154	49.06	0	0.00	0	0.00	0	0.00
041000030502	Big Run	26.63	5.56	79.13	33	32.17	0	0.00	0	0.00	0	0.00
041000030503	Russell Run-Saint Joseph River	26.57	4.53	82.93	184	44.95	0	0.00	0	0.00	0	0.00
041000030505	Willow Run-Saint Joseph River	26.12	5.40	79.33	163	46.98	0	0.00	0	0.00	0	0.00
041000030506	Hoodelmier Ditch-Saint Joseph River	22.94	2.37	89.68	14	42.92	0	0.00	0	0.00	0	0.00
041000040101	Muddy Creek	31.94	0.61	98.08	128	38.78	0	0.00	0	0.00	0	0.00
041000040102	Center Branch	31.80	0.49	98.46	159	44.77	0	0.00	0	0.00	0	0.00
041000040103	East Branch	29.91	0.32	98.92	73	53.86	0	0.00	0	0.00	0	0.00
041000040104	Kopp Creek	34.58	0.26	99.24	96	41.98	0	0.00	0	0.00	0	0.00

HUC12	HUC12 Name	Historic Wetland %	Curent Wetland %	Wetland Loss %	Number of NWI Wetlands	Area-Weighted Level 1 Score	Number of ORAM Assessments	Mean ORAM Score	Number of VIBI Assessments	Mean VIBI Score	Number of VIBI-FQ Assessments	Mean VIBI-FQ Score
041000040105	Sixmile Creek	28.88	0.25	99.13	46	41.67	0	0.00	0	0.00	0	0.00
041000040106	Fourmile Creek-Saint Marys River	18.08	2.76	84.73	148	42.85	0	0.00	0	0.00	0	0.00
041000040201	Hussey Creek	37.11	0.39	98.94	35	47.52	0	0.00	0	0.00	0	0.00
041000040202	Eightmile Creek	44.88	0.11	99.75	38	43.70	0	0.00	0	0.00	0	0.00
041000040203	Blierdofer Ditch	45.35	0.29	99.35	42	38.81	0	0.00	0	0.00	0	0.00
041000040204	Twelvemile Creek	43.71	0.44	99.00	52	52.62	0	0.00	0	0.00	0	0.00
041000040205	Prairie Creek-Saint Marys River	34.64	3.06	91.18	248	50.89	0	0.00	0	0.00	0	0.00
041000040301	Little Black Creek	60.11	0.48	99.20	62	31.40	0	0.00	0	0.00	0	0.00
041000040302	Black Creek	52.99	0.67	98.74	55	36.28	0	0.00	0	0.00	0	0.00
041000040303	Yankee Run-Saint Marys River	48.03	4.37	90.89	434	52.09	1	77.00	1	64.00	1	59.75
041000040304	Duck Creek	60.15	0.86	98.58	30	41.56	0	0.00	0	0.00	0	0.00
041000040305	Town of Willshire-Saint Marys River	41.27	1.65	96.00	32	37.40	0	0.00	0	0.00	0	0.00
041000040401	Twentyseven Mile Creek	47.54	0.71	98.51	112	52.78	0	0.00	0	0.00	0	0.00
041000040404	Little Blue Creek	60.95	0.39	99.37	2	60.21	0	0.00	0	0.00	0	0.00
041000050201	Zuber Cutoff	81.97	0.39	99.52	14	29.81	0	0.00	0	0.00	0	0.00
041000050202	North Chaney Ditch-Maumee River	48.74	0.91	98.14	18	40.41	0	0.00	0	0.00	0	0.00
041000050203	Marie DeLarme Creek	59.24	3.25	94.51	77	49.11	2	74.50	1	67.00	1	66.50
041000050204	Gordon Creek	49.23	0.95	98.07	76	50.87	0	0.00	0	0.00	0	0.00
041000050205	Sixmile Cutoff-Maumee River	46.03	1.15	97.50	17	43.93	0	0.00	0	0.00	0	0.00
041000050206	Platter Creek	59.74	0.98	98.36	21	56.29	0	0.00	0	0.00	0	0.00
041000050207	Sulphur Creek-Maumee River	63.84	1.16	98.18	27	52.57	0	0.00	0	0.00	0	0.00
041000050208	Snooks Run-Maumee River	46.19	1.14	97.53	35	57.66	0	0.00	0	0.00	0	0.00
041000060201	Silver Creek-Bean Creek	35.30	3.15	91.09	23	45.33	0	0.00	0	0.00	0	0.00
041000060202	Deer Creek-Bean Creek	33.09	2.79	91.57	41	53.28	0	0.00	0	0.00	0	0.00
041000060203	Old Bean Creek	44.01	2.86	93.50	112	55.03	0	0.00	0	0.00	0	0.00
041000060204	Mill Creek	24.72	3.50	85.85	207	54.09	0	0.00	0	0.00	0	0.00
041000060205	Stag Run-Bean Creek	36.79	1.81	95.07	29	51.88	0	0.00	0	0.00	0	0.00
041000060301	Bates Creek-Tiffin River	33.94	3.83	88.71	72	53.13	0	0.00	0	0.00	0	0.00
041000060302	Leatherwood Creek	31.75	2.18	93.13	32	47.31	0	0.00	0	0.00	0	0.00
041000060303	Flat Run-Tiffin River	37.05	2.56	93.10	41	63.01	0	0.00	0	0.00	0	0.00
041000060401	Upper Lick Creek	18.92	2.40	87.30	122	48.68	0	0.00	0	0.00	0	0.00
041000060402	Middle Lick Creek	45.86	2.14	95.34	67	56.41	0	0.00	0	0.00	0	0.00
041000060403	Prairie Creek	54.95	0.44	99.21	20	62.29	0	0.00	0	0.00	0	0.00
041000060404	Lower Lick Creek	57.10	1.49	97.39	25	59.31	0	0.00	0	0.00	0	0.00
041000060501	Beaver Creek	29.35	3.11	89.39	147	53.70	0	0.00	0	0.00	0	0.00
041000060502	Brush Creek	49.35	1.59	96.78	169	44.26	0	0.00	0	0.00	0	0.00
041000060503	Village of Stryker-Tiffin River	35.23	3.37	90.44	42	62.69	0	0.00	0	0.00	0	0.00
041000060504	Coon Creek-Tiffin River	56.67	1.69	97.01	51	61.77	0	0.00	0	0.00	0	0.00
041000060601	Lost Creek	45.46	1.68	96.31	73	59.75	0	0.00	0	0.00	0	0.00

HUC12	HUC12 Name	Historic Wetland %	Curent Wetland %	Wetland Loss %	Number of NWI Wetlands	Area-Weighted Level 1 Score	Number of ORAM Assessments	Mean ORAM Score	Number of VIBI Assessments	Mean VIBI Score	Number of VIBI-FQ Assessments	Mean VIBI-FQ Score
041000060602	Mud Creek	52.87	1.25	97.64	48	61.02	0	0.00	0	0.00	0	0.00
041000060603	Webb Run	63.29	1.80	97.16	44	51.63	0	0.00	0	0.00	0	0.00
041000060604	Buckskin Creek-Tiffin River	43.37	1.16	97.32	45	51.29	0	0.00	0	0.00	0	0.00
041000070101	Headwaters Auglaize River	34.09	0.87	97.46	256	41.24	0	0.00	0	0.00	0	0.00
041000070102	Blackhoof Creek	22.63	0.41	98.21	100	44.00	0	0.00	0	0.00	0	0.00
041000070103	Wrestle Creek-Auglaize River	28.36	0.88	96.91	199	48.08	0	0.00	0	0.00	0	0.00
041000070104	Pusheta Creek	27.86	0.37	98.68	157	41.80	0	0.00	0	0.00	0	0.00
041000070105	Dry Run-Auglaize River	21.55	0.30	98.60	82	35.01	0	0.00	0	0.00	0	0.00
041000070201	Twomile Creek	31.97	0.26	99.18	78	45.18	0	0.00	0	0.00	0	0.00
041000070202	Village of Buckland-Auglaize River	16.86	0.70	95.85	49	44.65	0	0.00	0	0.00	0	0.00
041000070203	Sims Run-Auglaize River	26.72	0.62	97.69	80	45.77	0	0.00	0	0.00	0	0.00
041000070204	Sixmile Creek-Auglaize River	43.57	1.95	95.52	172	45.26	0	0.00	0	0.00	0	0.00
041000070301	Upper Hog Creek	46.51	1.78	96.18	90	55.81	0	0.00	0	0.00	0	0.00
041000070302	Middle Hog Creek	55.52	0.79	98.58	68	53.79	0	0.00	0	0.00	0	0.00
041000070303	Little Hog Creek	24.54	0.70	97.14	95	40.33	0	0.00	0	0.00	0	0.00
041000070304	Lower Hog Creek	31.19	1.74	94.42	106	49.24	0	0.00	0	0.00	0	0.00
041000070305	Lost Creek	23.65	0.83	96.48	85	21.39	0	0.00	0	0.00	0	0.00
041000070306	Lima Reservoir-Ottawa River	14.35	1.03	92.80	175	31.68	0	0.00	0	0.00	0	0.00
041000070401	Little Ottawa River	22.65	0.67	97.05	97	26.50	0	0.00	0	0.00	0	0.00
041000070402	Dug Run-Ottawa River	42.37	0.97	97.71	42	56.86	0	0.00	0	0.00	0	0.00
041000070403	Honey Run	23.56	0.65	97.23	116	23.79	1	33.50	1	64.00	1	46.92
041000070404	Pike Run	38.15	0.41	98.93	45	32.01	0	0.00	0	0.00	0	0.00
041000070405	Leatherwood Ditch	65.22	0.71	98.91	19	50.46	0	0.00	0	0.00	0	0.00
041000070406	Beaver Run-Ottawa River	55.39	1.76	96.82	101	33.71	0	0.00	0	0.00	0	0.00
041000070501	Sugar Creek	42.85	0.90	97.90	216	45.85	0	0.00	0	0.00	0	0.00
041000070502	Plum Creek	65.49	0.51	99.22	47	37.79	0	0.00	0	0.00	0	0.00
041000070503	Village of Kalida-Ottawa River	77.51	1.45	98.12	40	34.81	0	0.00	0	0.00	0	0.00
041000070601	Kyle Prairie Creek	46.14	0.18	99.61	52	55.20	0	0.00	0	0.00	0	0.00
041000070602	Long Prairie Creek-Little Auglaize River	58.61	0.17	99.70	40	48.42	0	0.00	0	0.00	0	0.00
041000070603	Wolf Ditch-Little Auglaize River	60.37	0.24	99.60	39	51.53	0	0.00	0	0.00	0	0.00
041000070604	Dry Fork-Little Auglaize River	77.50	0.60	99.23	95	50.55	0	0.00	0	0.00	0	0.00
041000070701	Hagerman Creek	83.17	0.07	99.91	4	38.75	0	0.00	0	0.00	0	0.00
041000070702	West Branch Prairie Creek	70.54	0.39	99.45	94	47.20	0	0.00	0	0.00	0	0.00
041000070703	Prairie Creek	84.36	0.70	99.17	23	54.20	0	0.00	0	0.00	0	0.00
041000070801	Dog Creek	75.52	0.42	99.44	68	41.33	0	0.00	0	0.00	0	0.00
041000070802	Upper Town Creek	56.80	0.25	99.56	38	53.66	0	0.00	0	0.00	0	0.00
041000070803	Maddox Creek	64.74	0.22	99.67	73	50.00	0	0.00	0	0.00	0	0.00
041000070804	Lower Town Creek	74.20	0.18	99.75	44	55.68	0	0.00	0	0.00	0	0.00
041000070805	Middle Creek	77.52	0.97	98.75	22	55.99	0	0.00	0	0.00	0	0.00

HUC12	HUC12 Name	Historic Wetland %	Curent Wetland %	Wetland Loss %	Number of NWI Wetlands	Area-Weighted Level 1 Score	Number of ORAM Assessments	Mean ORAM Score	Number of VIBI Assessments	Mean VIBI Score	Number of VIBI-FQ Assessments	Mean VIBI-FQ Score
041000070806	Burt Lake-Little Auglaize River	57.73	0.94	98.38	13	38.96	0	0.00	0	0.00	0	0.00
041000070901	Upper Jennings Creek	57.31	0.29	99.50	57	49.46	0	0.00	0	0.00	0	0.00
041000070902	West Jennings Creek	67.80	0.15	99.78	10	36.42	0	0.00	0	0.00	0	0.00
041000070903	Lower Jennings Creek	61.96	0.77	98.76	57	37.92	0	0.00	0	0.00	0	0.00
041000070904	Big Run-Auglaize River	71.71	2.77	96.14	53	53.91	0	0.00	0	0.00	0	0.00
041000070905	Lapp Ditch-Auglaize River	77.37	2.94	96.20	49	49.09	0	0.00	0	0.00	0	0.00
041000070906	Prairie Creek	77.02	1.77	97.70	25	50.47	0	0.00	0	0.00	0	0.00
041000070907	Town of Oakwood-Auglaize River	55.29	2.04	96.31	23	60.08	1	78.00	1	87.00	1	91.63
041000071001	Upper Prairie Creek	81.71	0.01	99.99	3	38.71	0	0.00	0	0.00	0	0.00
041000071002	Upper Blue Creek	66.31	0.20	99.70	19	48.20	0	0.00	0	0.00	0	0.00
041000071003	Middle Blue Creek	85.42	0.54	99.36	11	47.20	0	0.00	0	0.00	0	0.00
041000071004	Lower Blue Creek	80.19	1.74	97.83	75	53.42	0	0.00	0	0.00	0	0.00
041000071005	Town of Charloe-Auglaize River	59.71	1.07	98.21	30	57.68	0	0.00	0	0.00	0	0.00
041000071101	North Powell Creek	74.82	2.46	96.71	106	54.76	0	0.00	0	0.00	0	0.00
041000071102	Upper Powell Creek	72.42	2.06	97.16	84	49.15	0	0.00	0	0.00	0	0.00
041000071103	Lower Powell Creek	46.30	1.07	97.69	24	48.13	0	0.00	0	0.00	0	0.00
041000071201	Headwaters Flatrock Creek	50.12	0.13	99.73	6	35.28	0	0.00	0	0.00	0	0.00
041000071204	Brown Ditch-Flatrock Creek	53.00	1.54	97.10	1	34.00	0	0.00	0	0.00	0	0.00
041000071205	Wildcat Creek-Flatrock Creek	75.02	2.68	96.43	39	64.98	0	0.00	0	0.00	0	0.00
041000071206	Big Run-Flatrock Creek	69.24	3.88	94.39	74	52.46	0	0.00	0	0.00	0	0.00
041000071207	Little Flatrock Creek	81.70	0.56	99.32	12	45.41	0	0.00	0	0.00	0	0.00
041000071208	Sixmile Creek	65.44	1.31	97.99	35	67.17	0	0.00	0	0.00	0	0.00
041000071209	Eagle Creek-Auglaize River	50.95	1.08	97.88	53	57.74	0	0.00	0	0.00	0	0.00
041000080101	Cessna Creek	35.07	1.83	94.79	102	52.68	1	61.00	1	53.00	0	0.00
041000080102	Headwaters Blanchard River	41.27	0.53	98.70	47	43.69	0	0.00	0	0.00	0	0.00
041000080103	The Outlet-Blanchard River	37.78	2.68	92.91	159	46.25	0	0.00	0	0.00	0	0.00
041000080104	Potato Run	36.41	0.56	98.46	110	39.24	0	0.00	0	0.00	0	0.00
041000080105	Ripley Run-Blanchard River	30.61	1.06	96.54	193	49.85	1	48.00	1	17.00	0	0.00
041000080201	Brights Ditch	46.80	0.31	99.35	51	40.76	0	0.00	0	0.00	0	0.00
041000080202	The Outlet	38.47	1.30	96.63	28	52.49	1	51.00	1	74.00	1	72.20
041000080203	Findlay Upground Reservoir Number One-Blanchard River	42.93	0.91	97.88	110	51.04	0	0.00	0	0.00	0	0.00
041000080204	Lye Creek	43.45	0.89	97.96	69	53.17	0	0.00	0	0.00	0	0.00
041000080205	City of Findlay-Blanchard River	30.63	1.03	96.63	11	39.42	0	0.00	0	0.00	0	0.00
041000080301	Upper Eagle Creek	34.54	0.87	97.49	63	60.18	0	0.00	0	0.00	0	0.00
041000080302	Lower Eagle Creek	40.22	0.98	97.57	105	34.02	0	0.00	0	0.00	0	0.00
041000080303	Aurand Run	43.87	1.19	97.29	52	42.71	0	0.00	0	0.00	0	0.00
041000080304	Howard Run-Blanchard River	32.31	1.07	96.70	65	37.94	0	0.00	0	0.00	0	0.00
041000080401	Binkley Ditch-Little Riley Creek	27.28	0.45	98.33	31	51.41	0	0.00	0	0.00	0	0.00
041000080402	Upper Riley Creek	35.41	0.45	98.72	45	59.26	0	0.00	0	0.00	0	0.00

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041000080403	Marsh Run-Little Riley Creek	31.67	0.65	97.95	68	47.50	0	0.00	0	0.00	0	0.00
041000080404	Middle Riley Creek	33.27	0.36	98.91	52	47.25	0	0.00	0	0.00	0	0.00
041000080405	Lower Riley Creek	49.63	1.23	97.52	100	39.41	0	0.00	0	0.00	0	0.00
041000080501	Tiderishi Creek	38.83	0.48	98.77	52	58.96	0	0.00	0	0.00	0	0.00
041000080502	Ottawa Creek	37.48	0.73	98.05	141	55.19	0	0.00	0	0.00	0	0.00
041000080503	Moffitt Ditch	51.53	0.48	99.06	12	58.61	0	0.00	0	0.00	0	0.00
041000080504	Dukes Run	46.76	1.20	97.43	32	50.45	0	0.00	0	0.00	0	0.00
041000080505	Dutch Run	60.61	1.19	98.03	29	53.65	0	0.00	0	0.00	0	0.00
041000080506	Village of Gilboa-Blanchard River	48.23	1.35	97.20	58	53.54	0	0.00	0	0.00	0	0.00
041000080601	Cranberry Creek	54.57	0.39	99.28	68	45.34	0	0.00	0	0.00	0	0.00
041000080602	Pike Run-Blanchard River	52.87	2.08	96.06	61	33.13	0	0.00	0	0.00	0	0.00
041000080603	Miller City Cutoff	80.02	1.60	98.00	28	41.84	0	0.00	0	0.00	0	0.00
041000080604	Bear Creek	71.62	1.20	98.33	16	46.91	0	0.00	0	0.00	0	0.00
041000080605	Deer Creek-Blanchard River	63.64	3.04	95.22	87	52.31	0	0.00	0	0.00	0	0.00
041000090101	West Creek	81.25	0.27	99.67	5	47.00	0	0.00	0	0.00	0	0.00
041000090102	Upper South Turkeyfoot Creek	80.23	0.71	99.12	20	54.70	0	0.00	0	0.00	0	0.00
041000090103	School Creek	79.53	2.00	97.48	49	59.00	0	0.00	0	0.00	0	0.00
041000090104	Middle South Turkeyfoot Creek	83.87	0.50	99.40	13	51.84	0	0.00	0	0.00	0	0.00
041000090105	Little Turkeyfoot Creek	84.16	0.51	99.40	9	61.15	0	0.00	0	0.00	0	0.00
041000090106	Lower South Turkeyfoot Creek	54.15	3.22	94.06	18	64.88	0	0.00	0	0.00	0	0.00
041000090201	Preston Run-Maumee River	45.19	0.55	98.78	16	20.98	0	0.00	0	0.00	0	0.00
041000090202	Benien Creek	71.10	0.68	99.04	19	52.21	0	0.00	0	0.00	0	0.00
041000090203	Wade Creek-Maumee River	56.75	1.27	97.76	41	56.03	0	0.00	0	0.00	0	0.00
041000090204	Garret Creek	67.90	1.33	98.04	35	54.95	0	0.00	0	0.00	0	0.00
041000090205	Oberhaus Creek	64.84	0.84	98.71	23	46.62	0	0.00	0	0.00	0	0.00
041000090206	Village of Napoleon-Maumee River	68.23	1.00	98.54	23	55.01	0	0.00	0	0.00	0	0.00
041000090207	Creager Cemetery-Maumee River	51.72	0.19	99.64	8	23.34	0	0.00	0	0.00	0	0.00
041000090301	Upper Bad Creek	50.80	3.31	93.48	210	51.66	0	0.00	0	0.00	0	0.00
041000090302	Lower Bad Creek	45.06	2.01	95.54	169	47.08	0	0.00	0	0.00	0	0.00
041000090401	Konzen Ditch	61.89	0.95	98.46	26	57.47	0	0.00	0	0.00	0	0.00
041000090402	North Turkeyfoot Creek	51.26	0.87	98.31	68	52.81	0	0.00	0	0.00	0	0.00
041000090403	Dry Creek-Maumee River	56.92	1.55	97.27	40	58.11	0	0.00	0	0.00	0	0.00
041000090501	Big Creek	81.12	0.76	99.07	16	59.68	0	0.00	0	0.00	0	0.00
041000090502	Hammer Creek	87.47	0.05	99.95	2	54.92	0	0.00	0	0.00	0	0.00
041000090503	Upper Beaver Creek	84.15	0.86	98.98	7	60.92	0	0.00	0	0.00	0	0.00
041000090504	Upper Yellow Creek	67.83	0.68	99.00	36	42.58	0	0.00	0	0.00	0	0.00
041000090505	Brush Creek	82.91	0.84	98.98	15	58.96	0	0.00	0	0.00	0	0.00
041000090506	Lower Yellow Creek	68.69	1.44	97.90	17	56.93	0	0.00	0	0.00	0	0.00
041000090507	Cutoff Ditch	79.47	0.17	99.78	7	35.49	0	0.00	0	0.00	0	0.00

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041000090508	Middle Beaver Creek	81.50	1.48	98.18	19	57.85	0	0.00	0	0.00	0	0.00
041000090509	Lower Beaver Creek	53.01	3.76	92.91	22	63.31	0	0.00	0	0.00	0	0.00
041000090510	Lick Creek-Maumee River	49.76	1.99	96.00	42	49.91	0	0.00	0	0.00	0	0.00
041000090601	Tontogany Creek	66.51	0.60	99.10	23	58.99	0	0.00	0	0.00	0	0.00
041000090602	Sugar Creek-Maumee River	43.69	1.32	96.97	41	48.04	0	0.00	0	0.00	0	0.00
041000090603	Haskins Road Ditch-Maumee River	68.80	0.94	98.64	11	51.90	0	0.00	0	0.00	0	0.00
041000090701	Ai Creek	55.59	2.72	95.11	127	72.93	5	66.10	3	80.67	3	83.09
041000090702	Fewless Creek-Swan Creek	48.97	2.09	95.73	121	51.33	0	0.00	0	0.00	0	0.00
041000090703	Gale Run-Swan Creek	35.01	3.31	90.55	87	72.32	7	61.86	3	83.67	2	71.43
041000090801	Upper Blue Creek	43.81	5.46	87.55	182	64.02	3	56.33	0	0.00	0	0.00
041000090802	Lower Blue Creek	51.66	1.77	96.58	67	57.04	4	65.63	3	78.00	3	73.31
041000090803	Wolf Creek	40.95	3.34	91.85	119	64.82	2	57.00	1	87.00	1	90.85
041000090804	Heilman Ditch-Swan Creek	46.72	1.74	96.27	61	48.86	2	63.00	2	50.00	2	62.81
041000090901	Grassy Creek Diversion	82.45	0.61	99.26	9	47.63	0	0.00	0	0.00	0	0.00
041000090902	Grassy Creek	62.45	0.64	98.97	12	35.96	0	0.00	0	0.00	0	0.00
041000090903	Crooked Creek-Maumee River	32.01	3.27	89.79	36	28.46	0	0.00	0	0.00	0	0.00
041000090904	Delaware Creek-Maumee River	15.35	1.22	92.07	25	18.76	0	0.00	0	0.00	0	0.00
041000100101	Rader Creek	72.00	1.17	98.37	44	55.72	0	0.00	0	0.00	0	0.00
041000100102	Needles Creek	80.69	0.68	99.15	18	53.62	0	0.00	0	0.00	0	0.00
041000100103	Rocky Ford	50.54	1.49	97.05	125	54.53	0	0.00	0	0.00	0	0.00
041000100104	Town of Rudolph-Middle Branch Portage River	79.16	1.35	98.30	29	60.08	0	0.00	0	0.00	0	0.00
041000100201	Bull Creek	69.90	1.70	97.57	32	52.17	0	0.00	0	0.00	0	0.00
041000100202	East Branch Portage River	50.40	1.43	97.16	30	59.99	0	0.00	0	0.00	0	0.00
041000100203	Town of Bloomdale-South Branch Portage River	54.90	1.13	97.94	44	65.85	0	0.00	0	0.00	0	0.00
041000100204	Rhodes Ditch-South Branch Portage River	62.93	2.78	95.59	24	60.93	0	0.00	0	0.00	0	0.00
041000100205	Cessna Ditch-Middle Branch Portage River	72.07	1.71	97.63	27	58.40	0	0.00	0	0.00	0	0.00
041000100301	North Branch Portage River	71.22	0.94	98.68	67	56.92	3	64.33	0	0.00	0	0.00
041000100302	Town of Pemberville-Portage River	65.32	0.51	99.22	11	42.80	0	0.00	0	0.00	0	0.00
041000100401	Sugar Creek	60.07	1.76	97.07	70	60.24	0	0.00	0	0.00	0	0.00
041000100402	Lacarpe Creek-Portage River	55.87	1.29	97.69	26	57.23	0	0.00	0	0.00	0	0.00
041000100501	Little Portage River	71.42	4.75	93.35	98	53.56	0	0.00	0	0.00	0	0.00
041000100502	Portage River	60.89	4.41	92.76	237	41.15	0	0.00	0	0.00	0	0.00
041000100503	Lacarpe Creek-Frontal Lake Erie	32.67	12.13	62.86	265	42.56	4	72.25	4	63.50	4	35.22
041000100601	Upper Toussaint Creek	70.99	1.06	98.50	72	48.08	0	0.00	0	0.00	0	0.00
041000100602	Packer Creek	74.77	1.66	97.78	80	44.75	0	0.00	0	0.00	0	0.00
041000100603	Lower Toussaint Creek	66.32	11.65	82.44	331	44.36	1	29.00	1	22.00	1	18.88
041000100701	Turtle Creek-Frontal Lake Erie	71.12	12.76	82.06	187	48.25	1	52.50	1	68.00	1	55.15
041000100702	Crane Creek-Frontal Lake Erie	77.32	6.41	91.71	134	50.65	1	51.00	0	0.00	0	0.00
041000100703	Cedar Creek-Frontal Lake Erie	74.53	1.59	97.86	56	48.02	0	0.00	0	0.00	0	0.00

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041000100704	Wolf Creek-Frontal Lake Erie	70.99	25.20	64.51	49	52.36	4	59.00	4	44.00	4	44.03
041000100705	Berger Ditch	83.58	0.93	98.88	22	42.98	0	0.00	0	0.00	0	0.00
041000100706	Otter Creek-Frontal Lake Erie	52.74	2.79	94.72	30	30.18	0	0.00	0	0.00	0	0.00
041000110101	Sawmill Creek	47.71	0.69	98.55	19	47.18	1	66.00	0	0.00	0	0.00
041000110102	Pipe Creek-Frontal Sandusky Bay	38.90	2.35	93.96	91	40.04	3	41.67	1	56.00	1	23.98
041000110103	Mills Creek	30.70	1.32	95.69	66	41.68	0	0.00	0	0.00	0	0.00
041000110201	Little Pickerel Creek-Frontal Sandusky Bay	54.52	12.84	76.46	152	55.47	0	0.00	0	0.00	0	0.00
041000110202	Strong Creek	40.89	5.79	85.85	42	54.43	0	0.00	0	0.00	0	0.00
041000110203	Pickerel Creek-Frontal Sandusky Bay	27.16	3.01	88.92	89	55.64	3	45.33	1	72.00	1	37.60
041000110204	Racoon Creek-Frontal Sandusky Bay	38.08	11.89	68.78	100	51.17	0	0.00	0	0.00	0	0.00
041000110205	South Creek-Frontal Sandusky Bay	37.92	4.89	87.11	47	47.10	0	0.00	0	0.00	0	0.00
041000110301	Brandywine Creek-Broken Sword Creek	34.08	2.38	93.02	290	60.39	1	28.00	1	16.00	1	1.54
041000110302	Indian Run-Broken Sword Creek	24.61	1.35	94.50	204	58.14	0	0.00	0	0.00	0	0.00
041000110401	Paramour Creek	32.63	1.04	96.83	98	45.82	0	0.00	0	0.00	0	0.00
041000110402	Loss Creek-Sandusky River	26.23	2.01	92.34	79	57.45	0	0.00	0	0.00	0	0.00
041000110403	Riley Reservoir-Sandusky River	34.31	1.98	94.24	192	51.31	0	0.00	0	0.00	0	0.00
041000110404	Grass Run	38.75	1.19	96.94	90	54.01	0	0.00	0	0.00	0	0.00
041000110405	Town of Wyandot-Sandusky River	33.61	1.75	94.81	111	60.91	1	68.00	1	84.00	1	66.44
041000110501	Prairie Run	44.72	2.60	94.18	49	61.20	0	0.00	0	0.00	0	0.00
041000110502	Headwaters Tymochtee Creek	47.42	2.02	95.73	79	63.38	0	0.00	0	0.00	0	0.00
041000110503	Carroll Ditch	35.34	1.38	96.09	49	64.80	0	0.00	0	0.00	0	0.00
041000110504	Paw Paw Run	21.97	1.41	93.56	81	45.71	0	0.00	0	0.00	0	0.00
041000110505	Reevhorn Run	61.04	0.21	99.66	32	36.40	0	0.00	0	0.00	0	0.00
041000110506	Upper Little Tymochtee Creek	37.83	0.64	98.31	92	44.43	0	0.00	0	0.00	0	0.00
041000110507	Lower Little Tymochtee Creek	78.00	7.14	90.84	259	50.03	3	66.83	2	57.00	2	52.73
041000110508	Warpole Creek	47.70	1.10	97.69	138	64.91	0	0.00	0	0.00	0	0.00
041000110509	Enoch Creek-Tymochtee Creek	29.61	1.10	96.27	285	51.45	0	0.00	0	0.00	0	0.00
041000110601	Oak Run	30.45	0.62	97.95	122	49.80	0	0.00	0	0.00	0	0.00
041000110602	Baughman Run-Tymochtee Creek	31.11	0.86	97.24	162	58.99	0	0.00	0	0.00	0	0.00
041000110603	Hart Ditch-Little Tymochtee Creek	42.22	0.83	98.04	184	30.20	0	0.00	0	0.00	0	0.00
041000110604	Spring Run	45.87	0.25	99.46	47	41.31	0	0.00	0	0.00	0	0.00
041000110605	Lick Run-Tymochtee Creek	38.35	0.87	97.73	139	44.27	0	0.00	0	0.00	0	0.00
041000110701	Little Sandusky River	44.68	1.09	97.55	242	41.99	4	64.50	1	64.00	1	62.94
041000110702	Town of Upper Sandusky-Sandusky River	26.05	0.69	97.34	100	32.59	0	0.00	0	0.00	0	0.00
041000110703	Negro Run	19.39	0.60	96.89	61	57.40	0	0.00	0	0.00	0	0.00
041000110704	Cranberry Run-Sandusky River	23.27	0.57	97.55	101	40.79	0	0.00	0	0.00	0	0.00
041000110705	Sugar Run-Sandusky River	27.11	1.15	95.75	137	37.94	0	0.00	0	0.00	0	0.00
041000110801	Brokenknife Creek	27.73	2.64	90.49	106	56.00	0	0.00	0	0.00	0	0.00
041000110802	Upper Honey Creek	46.72	6.27	86.58	120	78.87	3	39.17	3	54.00	3	39.83

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041000110803	Aicholz Ditch	26.61	1.73	93.50	29	61.53	0	0.00	0	0.00	0	0.00
041000110804	Silver Creek	21.16	2.41	88.60	72	57.69	1	36.00	1	19.00	1	17.79
041000110805	Middle Honey Creek	19.59	2.55	86.98	74	58.09	0	0.00	0	0.00	0	0.00
041000110806	Lower Honey Creek	16.71	1.59	90.49	81	57.50	0	0.00	0	0.00	0	0.00
041000110901	Taylor Run	28.26	0.82	97.09	112	35.69	0	0.00	0	0.00	0	0.00
041000110902	Headwaters Sycamore Creek	28.99	4.09	85.90	244	65.77	0	0.00	0	0.00	0	0.00
041000110903	Greasy Run-Sycamore Creek	22.80	1.60	92.99	149	51.85	0	0.00	0	0.00	0	0.00
041000110904	Thorn Run-Sandusky River	24.69	0.45	98.16	53	47.29	0	0.00	0	0.00	0	0.00
041000110905	Mile Run-Sandusky River	12.23	1.03	91.56	30	59.92	1	73.50	1	46.00	1	45.61
041000111001	East Branch East Branch Wolf Creek	32.57	0.79	97.56	30	44.50	0	0.00	0	0.00	0	0.00
041000111002	Town of New Riegel-East Branch Wolf Creek	28.16	0.71	97.48	19	55.44	0	0.00	0	0.00	0	0.00
041000111003	Snuff Creek-East Branch Wolf Creek	42.85	0.76	98.22	17	64.07	0	0.00	0	0.00	0	0.00
041000111004	Plum Run-Wolf Creek	49.37	1.09	97.78	71	56.62	0	0.00	0	0.00	0	0.00
041000111101	Rock Creek	10.77	1.00	90.75	48	50.21	0	0.00	0	0.00	0	0.00
041000111102	Morrison Creek	15.61	1.08	93.10	18	47.07	0	0.00	0	0.00	0	0.00
041000111103	Willow Creek-Sandusky River	15.06	0.24	98.38	15	35.85	0	0.00	0	0.00	0	0.00
041000111104	Sugar Creek	17.10	0.62	96.38	16	59.01	0	0.00	0	0.00	0	0.00
041000111105	Spicer Creek-Sandusky River	19.78	0.60	96.96	16	55.40	0	0.00	0	0.00	0	0.00
041000111201	Westerhouse Ditch	15.76	1.12	92.89	27	59.46	0	0.00	0	0.00	0	0.00
041000111202	Beaver Creek	16.74	1.32	92.14	47	56.65	0	0.00	0	0.00	0	0.00
041000111203	Flag Run-Green Creek	23.96	4.18	82.57	71	52.03	0	0.00	0	0.00	0	0.00
041000111301	Muskellunge Creek	59.25	0.98	98.34	33	56.59	0	0.00	0	0.00	0	0.00
041000111302	Indian Creek-Sandusky River	29.75	0.86	97.12	21	38.40	0	0.00	0	0.00	0	0.00
041000111303	Yellow Swale-Frontal Muddy Creek Bay	37.48	12.53	66.58	128	47.11	0	0.00	0	0.00	0	0.00
041000111401	Gries Ditch	60.01	0.53	99.12	17	64.31	0	0.00	0	0.00	0	0.00
041000111402	Town of Helena-Muddy Creek	65.93	0.74	98.89	39	53.76	0	0.00	0	0.00	0	0.00
041000111403	Little Muddy Creek	62.94	2.42	96.15	56	47.03	0	0.00	0	0.00	0	0.00
041000111404	Town of Lindsey-Muddy Creek	57.96	6.39	88.98	104	39.50	0	0.00	0	0.00	0	0.00
041000111405	Town of Gypsum-Frontal Sandusky Bay	58.28	15.98	72.57	148	48.82	1	50.00	1	60.00	1	33.05
041000120101	Clear Creek-Vermilion River	18.07	3.12	82.75	142	66.34	2	79.00	3	70.33	3	73.06
041000120102	Buck Creek	15.82	3.18	79.92	107	60.63	0	0.00	0	0.00	0	0.00
041000120103	Southwest Branch Vermilion River	10.92	6.58	39.73	205	55.38	0	0.00	0	0.00	0	0.00
041000120104	New London Upground Reservoir-Vermilion River	11.01	5.15	53.20	153	68.23	2	77.50	2	84.50	2	81.32
041000120105	Indian Creek-Vermilion River	16.22	5.60	65.47	204	68.10	0	0.00	0	0.00	0	0.00
041000120201	East Branch Vermilion River	16.26	5.91	63.64	266	63.63	2	72.00	2	72.00	2	67.37
041000120202	East Fork Vermilion River	21.13	2.19	89.61	172	57.65	1	24.00	1	6.00	1	6.92
041000120203	Town of Wakeman-Vermilion River	17.42	5.30	69.57	118	65.76	0	0.00	0	0.00	0	0.00
041000120204	Town of Vermilion-Vermilion River	21.92	3.28	85.02	84	68.64	0	0.00	0	0.00	0	0.00
041000120301	Sugar Creek-Frontal Lake Erie	43.77	2.36	94.61	59	66.30	0	0.00	0	0.00	0	0.00

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041000120302	Chappel Creek	21.91	3.49	84.06	115	60.13	1	70.00	1	63.00	1	36.19
041000120303	Cranberry Creek-Frontal Lake Erie	33.14	1.03	96.90	25	56.09	2	47.50	3	34.00	2	47.65
041000120304	Old Woman Creek	23.39	2.74	88.28	77	53.23	3	64.50	3	33.33	3	32.51
041000120401	Marsh Run	39.40	1.62	95.89	108	46.14	0	0.00	0	0.00	0	0.00
041000120402	Town of Plymouth-West Branch Huron River	16.70	2.90	82.65	247	55.44	1	64.00	1	61.00	1	59.31
041000120403	Walnut Creek-West Branch Huron River	10.50	9.73	7.28	106	67.30	0	0.00	0	0.00	0	0.00
041000120404	Holliday Lake	6.10	7.50	0.00	63	51.23	0	0.00	0	0.00	0	0.00
041000120405	Willard Lake-West Branch Huron River	6.98	8.25	0.00	196	66.51	0	0.00	0	0.00	0	0.00
041000120501	Mud Run	9.86	3.38	65.74	32	60.16	0	0.00	0	0.00	0	0.00
041000120502	Slate Run	17.34	1.73	90.03	53	60.08	0	0.00	0	0.00	0	0.00
041000120503	Frink Run	20.92	2.61	87.52	53	62.18	0	0.00	0	0.00	0	0.00
041000120504	Seymour Creek	57.96	0.84	98.54	18	58.00	0	0.00	0	0.00	0	0.00
041000120505	Town of Kimball	58.04	0.41	99.29	15	50.70	0	0.00	0	0.00	0	0.00
041000120506	Town of Monroeville-West Branch Huron River	41.80	2.40	94.26	23	55.11	0	0.00	0	0.00	0	0.00
041000120601	Upper East Branch Huron River	12.39	4.03	67.46	132	57.96	0	0.00	0	0.00	0	0.00
041000120602	Cole Creek	12.46	2.78	77.68	69	55.15	0	0.00	0	0.00	0	0.00
041000120603	Norwalk Creek	7.92	2.74	65.40	40	60.61	0	0.00	0	0.00	0	0.00
041000120604	Lower East Branch Huron River	9.70	3.91	59.69	69	51.14	0	0.00	0	0.00	0	0.00
041000120605	City of Norwalk	9.39	2.92	68.86	46	44.77	0	0.00	0	0.00	0	0.00
041000120606	Mud Brook-Frontal Lake Erie	16.81	3.25	80.67	121	43.52	2	48.75	2	54.00	2	35.85
041100010101	Plum Creek	15.78	1.69	89.30	56	48.52	1	58.00	1	67.00	1	38.06
041100010102	North Branch West Branch Rocky River	8.09	2.59	68.02	137	55.98	0	0.00	0	0.00	0	0.00
041100010103	Headwaters West Branch Rocky River	3.26	1.25	61.72	100	42.00	0	0.00	0	0.00	0	0.00
041100010104	Mallet Creek	6.55	2.84	56.66	75	52.67	0	0.00	0	0.00	0	0.00
041100010105	City of Medina-West Branch Rocky River	5.79	1.83	68.42	88	52.55	0	0.00	0	0.00	0	0.00
041100010106	Cossett Creek-West Branch Rocky River	11.04	2.40	78.23	188	53.82	0	0.00	0	0.00	0	0.00
041100010107	Plum Creek	21.61	3.94	81.75	92	59.88	0	0.00	0	0.00	0	0.00
041100010108	Baker Creek-West Branch Rocky River	16.41	1.83	88.86	66	44.32	0	0.00	0	0.00	0	0.00
041100010201	Headwaters East Branch Rocky River	6.82	1.87	72.53	108	61.54	0	0.00	0	0.00	0	0.00
041100010202	Baldwin Creek-East Branch Rocky River	5.05	3.77	25.20	125	55.04	0	0.00	0	0.00	0	0.00
041100010203	Rocky River	5.97	3.39	43.17	57	41.31	2	40.00	2	48.50	2	28.81
041100010204	Cahoon Creek-Frontal Lake Erie	26.33	0.77	97.06	66	41.74	0	0.00	0	0.00	0	0.00
041100010301	East Fork of East Branch Black River	6.43	2.57	60.06	77	52.51	1	29.00	1	45.00	1	35.89
041100010302	Headwaters West Fork East Branch Black River	16.32	3.17	80.57	191	59.76	0	0.00	0	0.00	0	0.00
041100010303	Coon Creek-East Branch Black River	8.75	1.39	84.09	105	56.36	1	70.00	1	84.00	1	87.88
041100010401	Town of Litchfield-East Branch Black River	12.95	2.27	82.43	144	59.42	0	0.00	0	0.00	0	0.00
041100010402	Salt Creek-East Branch Black River	16.69	2.50	85.04	125	63.42	0	0.00	0	0.00	0	0.00
041100010403	Willow Creek	33.60	1.48	95.60	70	40.61	0	0.00	0	0.00	0	0.00
041100010404	Jackson Ditch-East Branch Black River	24.17	1.65	93.16	130	52.21	0	0.00	0	0.00	0	0.00

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041100010501	Charlemont Creek	10.57	1.20	88.61	79	65.25	0	0.00	0	0.00	0	0.00
041100010502	Upper West Branch Black River	13.39	2.47	81.58	210	63.54	0	0.00	0	0.00	0	0.00
041100010503	Wellington Creek	19.39	2.33	87.99	129	55.37	0	0.00	0	0.00	0	0.00
041100010504	Middle West Branch Black River	18.17	1.62	91.11	148	56.73	0	0.00	0	0.00	0	0.00
041100010505	Plum Creek	28.50	1.11	96.11	54	45.62	0	0.00	0	0.00	0	0.00
041100010506	Lower West Branch Black River	33.47	1.49	95.55	128	57.69	0	0.00	0	0.00	0	0.00
041100010601	French Creek	46.44	1.85	96.02	68	58.35	1	81.50	1	85.00	1	77.89
041100010602	Black River	35.99	1.69	95.30	40	42.58	0	0.00	0	0.00	0	0.00
041100010603	Heider Ditch-Frontal Lake Erie	64.35	0.96	98.51	39	45.58	0	0.00	0	0.00	0	0.00
041100010701	Upper Beaver Creek	29.96	1.19	96.02	51	54.61	0	0.00	0	0.00	0	0.00
041100010702	Lower Beaver Creek	26.74	0.77	97.13	32	52.50	0	0.00	0	0.00	0	0.00
041100010703	Quarry Creek-Frontal Lake Erie	33.08	1.00	96.97	43	62.10	0	0.00	0	0.00	0	0.00
041100020101	East Branch Reservoir-East Branch Cuyahoga River	10.09	14.16	0.00	142	72.47	0	0.00	0	0.00	0	0.00
041100020102	West Branch Cuyahoga River	15.45	13.73	11.13	253	58.25	2	75.00	2	87.50	2	60.17
041100020103	Tare Creek-Cuyahoga River	15.91	17.01	0.00	152	60.62	3	70.83	3	58.33	3	47.39
041100020104	Ladue Reservoir-Bridge Creek	13.32	13.06	1.94	327	61.91	6	69.00	6	70.83	6	68.01
041100020105	Black Brook	24.11	8.63	64.21	75	66.81	1	71.00	1	84.00	1	80.77
041100020106	Sawyer Brook-Cuyahoga River	13.37	15.53	0.00	127	68.46	1	58.00	1	46.00	1	34.03
041100020201	Potter Creek-Breakneck Creek	24.71	5.61	77.31	194	55.04	2	51.50	2	55.00	2	44.55
041100020202	Feeder Canal-Breakneck Creek	21.37	10.11	52.70	326	56.55	1	67.00	1	74.00	1	65.04
041100020203	Lake Rockwell-Cuyahoga River	14.61	5.99	58.96	300	56.09	5	61.90	5	55.60	5	60.50
041100020301	Plum Creek	23.09	8.51	63.14	73	58.86	3	66.17	3	63.00	3	62.33
041100020302	Mogadore Reservoir-Little Cuyahoga River	14.21	4.80	66.19	60	59.04	1	75.00	1	94.00	1	88.27
041100020303	Wingfoot Lake Outlet-Little Cuyahoga River	11.02	3.24	70.56	86	47.54	3	62.67	3	63.67	3	55.23
041100020304	City of Akron-Little Cuyahoga River	1.46	0.30	79.50	12	19.72	0	0.00	0	0.00	0	0.00
041100020305	Fish Creek-Cuyahoga River	9.81	2.37	75.87	91	38.55	1	73.00	1	69.00	1	60.74
041100020401	Mud Brook	16.20	3.74	76.90	148	44.22	2	53.50	2	58.00	2	50.35
041100020402	Yellow Creek	7.70	2.25	70.80	105	44.24	0	0.00	0	0.00	0	0.00
041100020403	Furnace Run	4.03	0.95	76.54	30	56.86	0	0.00	0	0.00	0	0.00
041100020404	Brandywine Creek	12.71	1.53	87.94	53	41.60	0	0.00	0	0.00	0	0.00
041100020405	Boston Run-Cuyahoga River	3.63	1.57	56.82	68	63.31	6	41.67	6	28.50	6	17.38
041100020501	Pond Brook	23.39	10.32	55.87	126	50.94	1	68.00	1	84.00	1	66.07
041100020502	Headwaters Tinkers Creek	17.64	6.78	61.57	136	47.69	5	65.90	5	65.60	5	60.03
041100020503	Headwaters Chippewa Creek	4.21	2.35	44.11	43	55.43	0	0.00	0	0.00	0	0.00
041100020504	Town of Twinsburg-Tinkers Creek	5.84	2.23	61.88	164	49.10	1	65.00	1	74.00	1	63.93
041100020505	Willow Lake-Cuyahoga River	4.62	3.01	34.81	76	59.15	1	49.00	1	24.00	1	30.85
041100020601	Mill Creek	2.70	0.40	85.36	14	30.09	0	0.00	0	0.00	0	0.00
041100020602	Village of Independence-Cuyahoga River	2.41	0.79	67.27	19	48.73	0	0.00	0	0.00	0	0.00
041100020603	Big Creek	3.23	0.40	87.61	36	23.92	0	0.00	0	0.00	0	0.00

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041100020604	Town of Cuyahoga Heights-Cuyahoga River	3.28	0.53	83.68	28	25.79	0	0.00	0	0.00	0	0.00
041100020605	City of Cleveland-Cuyahoga River	1.64	0.01	99.31	2	3.00	0	0.00	0	0.00	0	0.00
041100030101	East Branch Ashtabula River	50.93	13.78	72.95	417	78.67	0	0.00	0	0.00	0	0.00
041100030102	West Branch Ashtabula River	54.09	16.67	69.18	349	75.77	0	0.00	0	0.00	0	0.00
041100030103	Upper Ashtabula River	41.15	10.08	75.50	220	75.76	0	0.00	0	0.00	0	0.00
041100030104	Middle Ashtabula River	33.65	13.45	60.04	291	73.05	0	0.00	0	0.00	0	0.00
041100030105	Lower Ashtabula River	8.52	4.29	49.72	107	40.25	0	0.00	3	31.00	3	23.52
041100030201	Indian Creek-Frontal Lake Erie	10.65	11.45	0.00	293	62.78	0	0.00	0	0.00	0	0.00
041100030202	Wheeler Creek-Frontal Lake Erie	15.16	7.02	53.67	344	64.18	3	62.00	3	53.33	3	34.17
041100030203	Arcola Creek	16.49	5.43	67.10	208	60.09	1	75.00	1	67.00	1	34.89
041100030204	McKinley Creek-Frontal Lake Erie	15.19	3.14	79.33	182	56.13	0	0.00	0	0.00	0	0.00
041100030301	Silver Creek	9.20	5.25	42.91	76	59.71	0	0.00	0	0.00	0	0.00
041100030302	Headwaters Aurora Branch	10.10	4.71	53.37	175	56.23	0	0.00	0	0.00	0	0.00
041100030303	McFarland Creek-Aurora Branch	6.91	2.12	69.24	67	44.84	0	0.00	0	0.00	0	0.00
041100030304	Beaver Creek-Chagrin River	11.05	7.57	31.51	216	62.50	0	0.00	0	0.00	0	0.00
041100030401	East Branch Chagrin River	4.27	0.90	79.03	93	53.78	1	72.00	1	86.00	1	92.20
041100030402	Griswold Creek-Chagrin River	3.08	1.19	61.50	163	48.25	0	0.00	0	0.00	0	0.00
041100030403	Town of Willoughby-Chagrin River	37.00	0.36	99.03	26	28.51	0	0.00	0	0.00	0	0.00
041100030501	Marsh Creek-Frontal Lake Erie	29.11	5.37	81.57	61	45.09	1	34.00	1	57.00	1	40.02
041100030502	City of Euclid-Frontal Lake Erie	44.90	0.04	99.92	4	3.42	0	0.00	0	0.00	0	0.00
041100030503	Euclid Creek	3.31	0.15	95.53	18	22.10	0	0.00	0	0.00	0	0.00
041100030504	Doan Brook-Frontal Lake Erie	1.67	0.03	98.07	5	20.11	0	0.00	2	23.50	2	15.45
041100040101	Dead Branch	15.07	6.50	56.83	413	67.37	0	0.00	0	0.00	0	0.00
041100040102	Lake Estabook-Grand River	8.86	8.18	7.71	232	61.51	0	0.00	0	0.00	0	0.00
041100040103	Baughman Creek	27.86	19.03	31.68	182	71.28	0	0.00	0	0.00	0	0.00
041100040104	Center Creek-Grand River	20.96	14.17	32.40	441	68.89	0	0.00	0	0.00	0	0.00
041100040105	Coffee Creek-Grand River	35.46	37.95	0.00	196	78.40	0	0.00	0	0.00	0	0.00
041100040106	Swine Creek	10.56	9.69	8.27	202	62.99	0	0.00	0	0.00	0	0.00
041100040201	Upper Rock Creek	50.55	18.09	64.22	307	70.53	0	0.00	0	0.00	0	0.00
041100040202	Middle Rock Creek	49.93	12.90	74.17	219	72.78	0	0.00	0	0.00	0	0.00
041100040203	Lower Rock Creek	44.92	7.26	83.84	184	73.69	0	0.00	0	0.00	0	0.00
041100040301	Phelps Creek	21.26	17.53	17.54	235	69.30	1	50.50	1	50.00	1	55.60
041100040302	Hoskins Creek	44.99	21.10	53.10	300	76.30	0	0.00	0	0.00	0	0.00
041100040303	Mill Creek-Grand River	37.24	19.92	46.53	371	72.77	0	0.00	0	0.00	0	0.00
041100040304	Mud Creek	40.20	17.38	56.76	222	80.57	1	76.00	1	84.00	1	86.37
041100040305	Plumb Creek-Grand River	44.23	18.86	57.37	256	78.01	1	74.00	1	91.00	1	90.65
041100040401	Griggs Creek	69.96	21.88	68.73	229	77.38	0	0.00	0	0.00	0	0.00
041100040402	Peters Creek-Mill Creek	53.35	18.04	66.20	693	77.05	0	0.00	0	0.00	0	0.00
041100040403	Town of Jefferson-Mill Creek	53.84	7.92	85.29	316	68.70	0	0.00	0	0.00	0	0.00

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041100040501	Badger Run-Three Brothers Creek	48.16	10.35	78.51	279	72.03	3	72.33	2	90.50	2	71.81
041100040502	Bronson Creek-Grand River	33.15	14.96	54.87	302	74.92	2	65.50	2	80.50	2	64.80
041100040601	Coffee Creek-Grand River	42.24	9.09	78.47	236	72.60	0	0.00	0	0.00	0	0.00
041100040602	Mill Creek	28.32	7.64	73.02	109	60.75	0	0.00	0	0.00	0	0.00
041100040603	Village of Mechanicsville-Grand River	15.25	2.67	82.48	85	73.17	0	0.00	0	0.00	0	0.00
041100040604	Paine Creek	7.80	11.07	0.00	168	68.29	1	64.00	1	50.00	1	35.74
041100040605	Talcott Creek-Grand River	4.52	4.42	2.16	51	69.19	0	0.00	0	0.00	0	0.00
041100040606	Big Creek	5.07	2.54	49.82	160	62.70	0	0.00	0	0.00	0	0.00
041100040607	Red Creek-Grand River	16.29	2.43	85.06	90	40.16	0	0.00	0	0.00	0	0.00
041201010409	Turkey Creek-Frontal Lake Erie	9.66	25.95	0.00	31	62.99	0	0.00	0	0.00	0	0.00
041201010603	West Branch Conneaut Creek	67.44	8.61	87.23	12	86.91	0	0.00	0	0.00	0	0.00
041201010605	Marsh Run-Conneaut Creek	13.08	3.87	70.39	363	59.58	0	0.00	0	0.00	0	0.00
041201010606	Town of North Kingsville-Frontal Lake Erie	10.11	9.71	3.95	284	66.59	1	67.00	1	84.00	1	86.86
050301010401	East Branch Middle Fork Little Beaver Creek	13.56	3.86	71.53	134	38.16	0	0.00	0	0.00	0	0.00
050301010402	Headwaters Middle Fork Little Beaver Creek	12.38	5.41	56.32	284	55.04	0	0.00	0	0.00	0	0.00
050301010403	Stone Mill Run-Middle Fork Little Beaver Creek	3.71	1.85	50.04	109	55.20	0	0.00	0	0.00	0	0.00
050301010404	Lisbon Creek-Middle Fork Little Beaver Creek	1.39	0.92	33.73	56	41.81	0	0.00	0	0.00	0	0.00
050301010405	Elk Run-Middle Fork Little Beaver Creek	1.12	1.09	3.12	59	28.50	0	0.00	0	0.00	0	0.00
050301010501	Cold Run	8.16	6.44	21.04	68	50.96	1	45.50	1	50.00	1	32.98
050301010502	Headwaters West Fork Little Beaver Creek	3.42	3.60	0.00	88	43.22	0	0.00	0	0.00	0	0.00
050301010503	Brush Creek	1.29	2.06	0.00	86	40.60	0	0.00	0	0.00	0	0.00
050301010504	Patterson Creek-West Fork Little Beaver Creek	0.80	0.82	0.00	88	59.77	0	0.00	0	0.00	0	0.00
050301010601	Longs Run	0.35	0.21	39.33	21	39.16	0	0.00	0	0.00	0	0.00
050301010602	Honey Creek	7.63	0.59	92.22	18	29.30	0	0.00	0	0.00	0	0.00
050301010603	Headwaters North Fork Little Beaver Creek	8.05	0.63	92.21	67	44.18	0	0.00	0	0.00	0	0.00
050301010604	Little Bull Creek	3.61	1.48	59.07	52	48.00	0	0.00	0	0.00	0	0.00
050301010605	Headwaters Bull Creek	9.60	3.05	68.20	57	42.86	0	0.00	0	0.00	0	0.00
050301010606	Leslie Run-Bull Creek	1.88	0.42	77.49	60	50.07	0	0.00	0	0.00	0	0.00
050301010607	Dilworth Run-North Fork Little Beaver Creek	0.52	0.13	74.91	5	52.79	0	0.00	0	0.00	0	0.00
050301010608	Brush Run-North Fork Little Beaver Creek	0.31	0.33	0.00	26	61.03	0	0.00	0	0.00	0	0.00
050301010609	Rough Run-Little Beaver Creek	0.31	0.17	45.19	27	55.25	0	0.00	0	0.00	0	0.00
050301010610	Bieler Run-Little Beaver Creek	0.17	0.09	45.56	9	50.97	0	0.00	0	0.00	0	0.00
050301010701	Headwaters Yellow Creek	0.91	0.70	23.09	37	68.93	0	0.00	0	0.00	0	0.00
050301010702	Elkhorn Creek	1.43	1.22	14.40	75	77.37	0	0.00	0	0.00	0	0.00
050301010703	Upper North Fork	0.35	1.34	0.00	48	73.47	0	0.00	0	0.00	0	0.00
050301010704	Long Run-Yellow Creek	1.18	1.13	4.60	39	77.01	1	76.00	1	77.00	1	67.29
050301010801	Town Fork	1.76	1.02	42.19	23	76.67	0	0.00	0	0.00	0	0.00
050301010802	Headwaters North Fork Yellow Creek	0.45	0.62	0.00	36	60.00	0	0.00	0	0.00	0	0.00
050301010803	Salt Run-North Fork Yellow Creek	0.28	0.23	17.96	35	69.65	0	0.00	0	0.00	0	0.00

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050301010804	Hollow Rock Run-Yellow Creek	0.75	0.43	42.57	33	67.80	0	0.00	0	0.00	0	0.00
050301011001	Upper Cross Creek	2.52	1.65	34.26	68	64.22	0	0.00	0	0.00	0	0.00
050301011002	Salem Creek	2.23	1.81	18.76	40	68.93	0	0.00	0	0.00	0	0.00
050301011003	Middle Cross Creek	1.65	0.72	56.10	23	64.68	0	0.00	0	0.00	0	0.00
050301011004	McIntyre Creek	5.16	1.84	64.30	124	57.16	0	0.00	0	0.00	0	0.00
050301011005	Lower Cross Creek	1.83	0.41	77.59	57	63.88	0	0.00	0	0.00	0	0.00
050301011102	Little Yellow Creek	0.39	0.65	0.00	36	59.19	0	0.00	0	0.00	0	0.00
050301011103	Carpenter Run-Ohio River	0.17	0.11	37.33	30	21.00	0	0.00	0	0.00	0	0.00
050301011106	Hardin Run-Ohio River	0.67	0.08	87.44	8	61.57	0	0.00	0	0.00	0	0.00
050301011107	Island Creek	1.50	0.67	55.36	43	68.42	0	0.00	0	0.00	0	0.00
050301011109	Wills Creek-Ohio River	1.29	0.44	66.04	24	45.28	0	0.00	0	0.00	0	0.00
050301020104	Frontal Pymatuning Reservoir	37.00	13.12	64.54	493	69.06	0	0.00	0	0.00	0	0.00
050301020105	Pymatuning Reservoir	0.38	1.08	0.00	11	46.98	0	0.00	0	0.00	0	0.00
050301020301	Headwaters Pymatuning Creek	29.12	14.23	51.13	630	69.13	1	55.50	1	66.00	1	51.90
050301020302	Sugar Creek-Pymatuning Creek	22.53	11.41	49.36	415	71.47	0	0.00	0	0.00	0	0.00
050301020303	Stratton Creek-Pymatuning Creek	20.34	12.99	36.14	228	74.02	0	0.00	0	0.00	0	0.00
050301020304	Booth Run-Pymatuning Creek	14.31	10.28	28.15	250	70.65	1	82.50	1	80.00	1	86.38
050301020401	Sugar Run-Shenango River	24.39	5.01	79.48	1	60.00	0	0.00	0	0.00	0	0.00
050301020601	Yankee Run	14.33	6.17	56.95	336	69.67	0	0.00	0	0.00	0	0.00
050301020602	Little Yankee Run	11.41	3.46	69.64	320	59.10	0	0.00	0	0.00	0	0.00
050301020603	McCullough Run-Shenango River	12.46	1.73	86.13	49	57.52	0	0.00	0	0.00	0	0.00
050301020606	Deer Creek-Shenango River	39.00	4.10	89.49	11	66.78	0	0.00	0	0.00	0	0.00
050301030101	Beaver Run-Mahoning River	7.76	5.33	31.32	272	46.08	2	69.25	2	59.00	2	60.14
050301030102	Beech Creek	12.96	3.55	72.57	186	47.52	0	0.00	0	0.00	0	0.00
050301030103	Fish Creek-Mahoning River	17.46	4.75	72.79	367	50.52	0	0.00	0	0.00	0	0.00
050301030201	Deer Creek	18.19	5.24	71.22	199	63.29	0	0.00	0	0.00	0	0.00
050301030202	Willow Creek	27.52	12.10	56.02	128	72.14	0	0.00	0	0.00	0	0.00
050301030203	Mill Creek	25.02	7.51	69.98	361	66.86	0	0.00	0	0.00	0	0.00
050301030204	Island Creek-Mahoning River	16.65	4.01	75.91	161	60.28	0	0.00	0	0.00	0	0.00
050301030301	Kale Creek	20.03	10.04	49.86	219	69.92	0	0.00	0	0.00	0	0.00
050301030302	Headwaters West Branch Mahoning River	17.51	6.31	63.97	184	59.32	0	0.00	0	0.00	0	0.00
050301030303	Barrel Run	16.23	5.89	63.68	69	62.77	0	0.00	0	0.00	0	0.00
050301030304	Kirwin Reservoir-West Branch Mahoning River	8.06	4.64	42.48	151	69.80	0	0.00	0	0.00	0	0.00
050301030305	Town of Newton Falls-West Branch Mahoning River	18.46	13.49	26.93	232	70.35	0	0.00	0	0.00	0	0.00
050301030306	Charley Run Creek-Mahoning River	19.36	3.00	84.51	271	60.04	0	0.00	0	0.00	0	0.00
050301030401	Headwaters Eagle Creek	14.20	7.34	48.29	73	64.43	1	70.00	1	91.00	1	83.81
050301030402	South Fork Eagle Creek	21.48	11.17	47.98	159	74.73	0	0.00	0	0.00	0	0.00
050301030403	Camp Creek-Eagle Creek	16.79	8.77	47.80	142	70.52	5	74.80	5	82.40	5	72.01
050301030404	Tinkers Creek	24.57	12.70	48.32	132	66.61	0	0.00	0	0.00	0	0.00

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050301030405	Mouth Eagle Creek	25.71	9.86	61.66	250	71.14	0	0.00	0	0.00	0	0.00
050301030406	Chocolate Run-Mahoning River	18.50	5.47	70.42	264	63.79	0	0.00	0	0.00	0	0.00
050301030501	Upper Mosquito Creek	34.88	14.21	59.27	273	78.29	0	0.00	0	0.00	0	0.00
050301030502	Middle Mosquito Creek	19.92	11.54	42.07	575	72.79	0	0.00	0	0.00	0	0.00
050301030503	Lower Mosquito Creek	14.89	5.39	63.82	297	57.10	0	0.00	0	0.00	0	0.00
050301030601	Duck Creek	24.59	5.72	76.75	428	57.24	0	0.00	0	0.00	0	0.00
050301030602	Mud Creek	16.07	2.31	85.65	112	49.54	0	0.00	0	0.00	0	0.00
050301030603	City of Warren-Mahoning River	13.39	3.48	74.05	314	50.04	0	0.00	0	0.00	0	0.00
050301030701	Upper Meander Creek	21.68	4.85	77.62	212	57.52	0	0.00	0	0.00	0	0.00
050301030702	Middle Meander Creek	19.66	2.17	88.95	250	56.29	0	0.00	0	0.00	0	0.00
050301030703	Lower Meander Creek	18.62	2.58	86.13	196	55.59	0	0.00	0	0.00	0	0.00
050301030704	Squaw Creek	9.93	3.33	66.46	186	55.51	0	0.00	0	0.00	0	0.00
050301030705	Little Squaw Creek-Mahoning River	5.99	0.49	91.85	51	37.34	0	0.00	0	0.00	0	0.00
050301030801	Headwaters Mill Creek	23.24	7.30	68.60	154	50.33	0	0.00	0	0.00	0	0.00
050301030802	Indian Run	22.01	1.03	95.34	38	47.01	0	0.00	0	0.00	0	0.00
050301030803	Andersons Run-Mill Creek	16.54	0.95	94.26	47	39.85	0	0.00	0	0.00	0	0.00
050301030804	Crab Creek	10.32	1.39	86.49	110	55.33	0	0.00	0	0.00	0	0.00
050301030805	Headwaters Yellow Creek	9.39	2.19	76.63	78	46.32	0	0.00	0	0.00	0	0.00
050301030806	Burgess Run-Yellow Creek	17.00	3.14	81.51	85	48.57	0	0.00	0	0.00	0	0.00
050301030807	Dry Run-Mahoning River	13.65	3.44	74.80	126	60.01	0	0.00	0	0.00	0	0.00
050301030808	Hickory Run	22.13	0.83	96.24	25	41.18	0	0.00	0	0.00	0	0.00
050301030809	Coffee Run-Mahoning River	14.02	3.48	75.18	136	46.58	0	0.00	0	0.00	0	0.00
050301060201	South Fork Short Creek	5.60	1.08	80.71	41	62.96	0	0.00	0	0.00	0	0.00
050301060202	Middle Fork Short Creek	4.31	1.73	59.81	55	59.70	0	0.00	0	0.00	0	0.00
050301060203	North Fork Short Creek	4.12	2.30	44.20	60	68.25	0	0.00	0	0.00	0	0.00
050301060204	Piney Fork	3.68	0.97	73.48	55	48.92	0	0.00	0	0.00	0	0.00
050301060205	Perrin Run-Short Creek	2.06	0.61	70.43	52	62.09	0	0.00	0	0.00	0	0.00
050301060206	Little Short Creek	1.13	0.72	36.20	48	52.83	0	0.00	0	0.00	0	0.00
050301060207	Dry Fork-Short Creek	2.38	1.30	45.41	103	38.94	0	0.00	0	0.00	0	0.00
050301060301	Crabapple Creek	4.69	1.97	57.99	114	57.03	0	0.00	0	0.00	0	0.00
050301060302	Headwaters Wheeling Creek	1.69	1.16	31.22	87	42.19	0	0.00	0	0.00	0	0.00
050301060303	Cox Run-Wheeling Creek	2.15	0.76	64.64	156	59.93	0	0.00	0	0.00	0	0.00
050301060304	Flat Run-Wheeling Creek	1.11	0.22	80.47	38	43.11	0	0.00	0	0.00	0	0.00
050301060701	Williams Creek	0.57	0.20	65.04	15	61.89	0	0.00	0	0.00	0	0.00
050301060702	Upper McMahon Creek	0.48	0.45	6.57	64	47.01	0	0.00	0	0.00	0	0.00
050301060703	Little McMahon Creek	1.13	0.25	77.52	25	39.24	0	0.00	0	0.00	0	0.00
050301060704	Lower McMahon Creek	0.84	0.27	67.67	38	50.67	0	0.00	0	0.00	0	0.00
050301060901	North Fork Captina Creek	0.54	0.35	34.14	73	54.62	0	0.00	0	0.00	0	0.00
050301060902	South Fork Captina Creek	0.44	0.27	37.36	52	61.80	0	0.00	0	0.00	0	0.00

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050301060903	Bend Fork	0.23	0.15	32.52	31	50.81	0	0.00	0	0.00	0	0.00
050301060904	Piney Creek-Captina Creek	0.56	0.15	74.10	15	55.54	0	0.00	0	0.00	0	0.00
050301060905	Pea Vine Creek-Captina Creek	0.56	0.27	51.71	44	51.94	0	0.00	0	0.00	0	0.00
050301060906	Cat Run-Captina Creek	0.62	0.31	50.39	25	39.19	0	0.00	0	0.00	0	0.00
050301061201	Rush Run	2.43	0.81	66.79	52	60.77	0	0.00	0	0.00	0	0.00
050301061202	Salt Run-Ohio River	2.32	0.65	72.04	74	44.78	0	0.00	0	0.00	0	0.00
050301061204	Glenns Run-Ohio River	1.07	0.61	43.18	47	28.57	0	0.00	0	0.00	0	0.00
050301061205	Boggs Run-Ohio River	0.77	0.60	22.37	9	16.14	0	0.00	0	0.00	0	0.00
050301061206	Wegee Creek-Ohio River	0.63	0.26	59.76	12	60.60	0	0.00	0	0.00	0	0.00
050301061207	Pipe Creek-Ohio River	0.48	0.28	42.04	30	57.68	0	0.00	0	0.00	0	0.00
050301061208	Big Run-Ohio River	0.06	0.03	60.22	2	36.67	0	0.00	0	0.00	0	0.00
050302010101	Upper Sunfish Creek	0.21	0.02	89.54	11	58.84	0	0.00	0	0.00	0	0.00
050302010102	Piney Fork	0.18	0.08	56.18	5	72.60	0	0.00	0	0.00	0	0.00
050302010103	Middle Sunfish Creek	0.10	0.13	0.00	15	69.29	0	0.00	0	0.00	0	0.00
050302010104	Lower Sunfish Creek	0.09	0.08	5.63	15	57.68	0	0.00	0	0.00	0	0.00
050302010601	Rich Fork	0.15	0.04	77.15	6	74.09	0	0.00	0	0.00	0	0.00
050302010602	Cranenest Fork	0.17	0.18	0.00	16	72.94	0	0.00	0	0.00	0	0.00
050302010603	Wolfpen Run-Little Muskingum River	0.18	0.03	85.51	3	59.33	0	0.00	0	0.00	0	0.00
050302010604	Witten Fork	0.17	0.07	61.11	20	72.27	0	0.00	0	0.00	0	0.00
050302010605	Straight Fork-Little Muskingum River	0.26	0.32	0.00	48	60.88	0	0.00	0	0.00	0	0.00
050302010701	Clear Fork Little Muskingum River	0.23	0.01	95.76	15	67.59	0	0.00	0	0.00	0	0.00
050302010702	Archers Fork	0.53	0.23	56.98	16	70.63	0	0.00	0	0.00	0	0.00
050302010703	Wingett Run-Little Muskingum River	0.62	0.23	62.43	22	50.70	0	0.00	0	0.00	0	0.00
050302010704	Fifteen Mile Creek	0.61	0.01	97.57	6	68.54	0	0.00	0	0.00	0	0.00
050302010705	Eightmile Creek-Little Muskingum River	0.86	0.15	82.33	37	25.49	0	0.00	0	0.00	0	0.00
050302010801	Upper East Fork Duck Creek	1.00	0.32	67.45	45	53.49	0	0.00	0	0.00	0	0.00
050302010802	Middle Fork Duck Creek	2.27	0.97	57.22	139	64.37	0	0.00	0	0.00	0	0.00
050302010803	Middle East Fork Duck Creek	1.39	0.34	75.61	134	64.60	0	0.00	0	0.00	0	0.00
050302010804	Paw Paw Creek	0.48	0.40	16.15	24	50.97	0	0.00	0	0.00	0	0.00
050302010805	Lower East Fork Duck Creek	1.76	2.40	0.00	66	61.24	0	0.00	0	0.00	0	0.00
050302010901	Headwaters West Fork Duck Creek	1.36	0.27	80.32	143	53.79	0	0.00	0	0.00	0	0.00
050302010902	Buffalo Run-West Fork Duck Creek	2.07	0.83	60.10	165	65.07	0	0.00	0	0.00	0	0.00
050302010903	New Years Creek-Duck Creek	0.71	0.15	79.34	25	57.13	0	0.00	0	0.00	0	0.00
050302010904	Sugar Creek-Duck Creek	1.22	0.39	67.93	36	20.25	0	0.00	0	0.00	0	0.00
050302011001	Stillhouse Run-Ohio River	0.03	1.14	0.00	17	33.43	0	0.00	0	0.00	0	0.00
050302011002	Opossum Creek	0.06	0.27	0.00	22	58.23	0	0.00	0	0.00	0	0.00
050302011004	Haynes Run-Ohio River	0.06	0.48	0.00	17	42.95	0	0.00	0	0.00	0	0.00
050302011005	Patton Run-Ohio River	0.11	0.60	0.00	31	41.86	0	0.00	0	0.00	0	0.00
050302011006	Mill Creek-Ohio River	0.67	0.59	11.39	46	42.25	0	0.00	0	0.00	0	0.00

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050302011007	Leith Run-Ohio River	0.64	0.66	0.00	47	49.32	0	0.00	0	0.00	0	0.00
050302011009	Cow Creek-Ohio River	1.48	0.59	59.89	57	35.88	0	0.00	0	0.00	0	0.00
050302011010	Bull Creek-Ohio River	5.16	2.62	49.17	23	10.90	0	0.00	0	0.00	0	0.00
050302020102	Mile Run-Ohio River	1.25	0.35	72.29	43	38.16	0	0.00	0	0.00	0	0.00
050302020103	Headwaters Little Hocking River	0.79	0.14	82.83	50	45.75	0	0.00	0	0.00	0	0.00
050302020104	West Branch Little Hocking River	0.68	0.67	1.99	75	77.52	0	0.00	0	0.00	0	0.00
050302020105	Little West Branch Little Hocking River-Little Hocking River	0.75	0.07	91.06	23	47.96	0	0.00	0	0.00	0	0.00
050302020106	Sandy Creek-Ohio River	1.83	0.30	83.58	42	21.38	0	0.00	0	0.00	0	0.00
050302020201	Headwaters West Branch Shade River	2.81	1.77	36.93	105	57.25	0	0.00	0	0.00	0	0.00
050302020202	Kingsbury Creek	0.29	0.49	0.00	36	59.08	0	0.00	0	0.00	0	0.00
050302020203	Headwaters Middle Branch Shade River	1.76	0.36	79.40	56	60.83	0	0.00	0	0.00	0	0.00
050302020204	Elk Run-Middle Branch Shade River	0.09	0.39	0.00	34	55.23	0	0.00	0	0.00	0	0.00
050302020205	Walker Run-West Branch Shade River	0.06	0.70	0.00	65	58.36	0	0.00	0	0.00	0	0.00
050302020301	Horse Cave Creek	0.05	0.04	33.54	14	42.16	0	0.00	0	0.00	0	0.00
050302020302	Headwaters East Branch Shade River	1.77	0.24	86.31	31	52.94	0	0.00	0	0.00	0	0.00
050302020303	Big Run-East Branch Shade River	0.00	0.05	0.00	11	53.05	0	0.00	0	0.00	0	0.00
050302020304	Spruce Creek-Shade River	0.06	0.02	57.09	8	32.83	0	0.00	0	0.00	0	0.00
050302020404	Forked Run-Ohio River	0.41	0.27	35.15	37	42.31	0	0.00	0	0.00	0	0.00
050302020701	Headwaters Leading Creek	0.64	0.48	25.43	48	51.03	0	0.00	0	0.00	0	0.00
050302020702	Mud Fork	0.42	0.72	0.00	69	55.95	0	0.00	0	0.00	0	0.00
050302020703	Ogden Run-Leading Creek	0.19	1.34	0.00	112	67.31	0	0.00	0	0.00	0	0.00
050302020704	Little Leading Creek	0.33	0.80	0.00	115	56.99	0	0.00	0	0.00	0	0.00
050302020705	Thomas Fork	0.23	0.11	52.94	34	45.25	0	0.00	0	0.00	0	0.00
050302020706	Parker Run-Leading Creek	0.15	0.92	0.00	180	61.52	0	0.00	0	0.00	0	0.00
050302020802	Groundhog Creek-Ohio River	0.04	0.44	0.00	18	56.95	0	0.00	0	0.00	0	0.00
050302020803	Oldtown Creek-Ohio River	0.03	0.15	0.00	17	46.15	0	0.00	0	0.00	0	0.00
050302020804	West Creek-Ohio River	0.09	0.35	0.00	56	45.11	0	0.00	0	0.00	0	0.00
050302020805	Broad Run-Ohio River	0.13	0.15	0.00	16	34.71	0	0.00	0	0.00	0	0.00
050302020901	Kyger Creek	2.26	0.22	90.47	49	57.15	0	0.00	0	0.00	0	0.00
050302020902	Campaign Creek	0.41	0.21	48.84	51	55.49	0	0.00	0	0.00	0	0.00
050302020904	Crooked Creek-Ohio River	1.57	0.41	74.14	8	24.22	0	0.00	0	0.00	0	0.00
050302040101	Center Branch	4.16	0.91	78.22	68	58.93	0	0.00	0	0.00	0	0.00
050302040102	Headwaters Rush Creek	6.96	1.85	73.44	167	47.91	0	0.00	0	0.00	0	0.00
050302040103	Clark Run-Rush Creek	6.66	1.73	74.08	130	63.93	0	0.00	0	0.00	0	0.00
050302040201	Headwaters Little Rush Creek	13.32	0.98	92.66	67	57.06	0	0.00	0	0.00	0	0.00
050302040202	Indian Creek-Little Rush Creek	18.31	0.27	98.50	40	57.71	0	0.00	0	0.00	0	0.00
050302040203	Raccoon Run	6.98	0.27	96.16	26	34.48	0	0.00	0	0.00	0	0.00
050302040204	Turkey Run-Rush Creek	2.66	0.85	68.00	146	50.35	0	0.00	0	0.00	0	0.00
050302040301	Headwaters Clear Creek	22.01	0.27	98.79	50	37.27	0	0.00	0	0.00	0	0.00

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050302040302	Mouth Clear Creek	3.23	0.07	97.96	27	35.32	0	0.00	0	0.00	0	0.00
050302040401	Headwaters Hocking River	17.65	0.78	95.60	74	30.58	0	0.00	0	0.00	0	0.00
050302040402	Baldwin Run	10.84	0.04	99.64	3	33.36	0	0.00	0	0.00	0	0.00
050302040403	Pleasant Run	13.99	0.17	98.81	16	17.24	0	0.00	0	0.00	0	0.00
050302040404	Tarhe Run-Hocking River	2.71	0.18	93.48	20	28.09	0	0.00	0	0.00	0	0.00
050302040405	Buck Run-Hocking River	0.78	0.31	60.63	49	56.14	0	0.00	0	0.00	0	0.00
050302040501	Little Monday Creek	1.33	0.38	71.74	53	55.91	0	0.00	0	0.00	0	0.00
050302040502	Lost Run-Monday Creek	2.85	1.44	49.45	99	66.06	5	61.90	2	67.50	2	57.02
050302040503	Snow Fork	0.79	0.64	19.65	70	64.75	0	0.00	0	0.00	0	0.00
050302040504	Kitchen Run-Monday Creek	1.12	1.82	0.00	148	65.76	1	52.00	1	75.00	1	46.49
050302040601	Clear Fork	1.17	0.42	64.10	22	65.00	0	0.00	0	0.00	0	0.00
050302040602	Scott Creek	0.80	0.21	73.98	41	53.65	0	0.00	0	0.00	0	0.00
050302040603	Oldtown Creek	0.81	0.40	49.91	32	32.16	0	0.00	0	0.00	0	0.00
050302040604	Fivemile Creek	0.68	0.44	35.45	45	60.66	0	0.00	0	0.00	0	0.00
050302040605	Harper Run-Hocking River	1.27	0.54	57.64	71	44.06	0	0.00	0	0.00	0	0.00
050302040606	Dorr Run-Hocking River	0.87	1.27	0.00	137	44.51	2	43.00	2	68.00	2	34.33
050302040701	East Branch Sunday Creek	0.83	0.52	37.11	49	71.54	1	52.00	0	0.00	0	0.00
050302040702	Dotson Creek-Sunday Creek	0.62	0.37	40.53	44	62.78	0	0.00	0	0.00	0	0.00
050302040703	West Branch Sunday Creek	1.80	0.72	60.22	98	58.75	1	52.50	1	61.00	1	35.71
050302040704	Greens Run-Sunday Creek	1.28	1.43	0.00	168	45.98	2	56.75	0	0.00	0	0.00
050302040801	Hamley Run-Hocking River	0.88	1.75	0.00	130	47.03	1	54.00	0	0.00	0	0.00
050302040802	Headwaters Margaret Creek	5.86	0.49	91.68	107	38.93	0	0.00	0	0.00	0	0.00
050302040803	Factory Creek-Margaret Creek	7.85	1.03	86.92	94	50.35	0	0.00	0	0.00	0	0.00
050302040804	Coates Run-Hocking River	1.04	1.84	0.00	86	29.15	0	0.00	0	0.00	0	0.00
050302040901	Miners and Hyde Forks	2.26	0.55	75.64	32	55.81	0	0.00	0	0.00	0	0.00
050302040902	McDougall Branch	4.26	0.35	91.89	67	60.91	0	0.00	0	0.00	0	0.00
050302040903	Kasler Creek-Federal Creek	7.61	0.08	98.94	19	49.48	0	0.00	0	0.00	0	0.00
050302040904	Sharps Fork	2.73	0.73	73.12	71	64.32	0	0.00	0	0.00	0	0.00
050302040905	Big Run-Federal Creek	2.66	0.32	87.85	38	78.23	0	0.00	0	0.00	0	0.00
050302041001	Willow Creek-Hocking River	0.45	0.74	0.00	68	45.67	0	0.00	0	0.00	0	0.00
050302041002	Piper Run-Hocking River	1.93	0.79	58.76	54	47.19	0	0.00	0	0.00	0	0.00
050302041003	Fourmile Creek	0.49	0.15	68.72	9	55.76	0	0.00	0	0.00	0	0.00
050302041004	Frost Run-Hocking River	3.32	0.57	82.91	76	51.52	0	0.00	0	0.00	0	0.00
050400010101	Headwaters Tuscarawas River	17.13	4.34	74.65	196	39.88	0	0.00	0	0.00	0	0.00
050400010102	Pigeon Creek	24.21	3.46	85.71	68	45.93	1	60.00	0	0.00	0	0.00
050400010103	Hudson Run	3.32	0.94	71.67	30	40.01	0	0.00	0	0.00	0	0.00
050400010104	Wolf Creek	8.32	4.53	45.61	137	56.27	0	0.00	0	0.00	0	0.00
050400010105	Portage Lakes-Tuscarawas River	7.48	3.38	54.88	86	47.77	0	0.00	0	0.00	0	0.00
050400010201	Headwaters Chippewa Creek	11.38	4.44	60.99	90	43.85	0	0.00	0	0.00	0	0.00

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050400010202	Hubbard Creek-Chippewa Creek	10.61	2.95	72.19	112	48.19	0	0.00	0	0.00	0	0.00
050400010203	Little Chippewa Creek	13.94	0.76	94.58	62	33.75	0	0.00	0	0.00	0	0.00
050400010204	River Styx	9.41	1.29	86.25	104	34.53	0	0.00	0	0.00	0	0.00
050400010205	Tommy Run-Chippewa Creek	15.09	2.91	80.69	147	53.06	0	0.00	0	0.00	0	0.00
050400010206	Red Run	9.18	0.64	93.04	40	32.62	0	0.00	0	0.00	0	0.00
050400010207	Silver Creek-Chippewa Creek	11.94	6.90	42.25	128	55.54	0	0.00	0	0.00	0	0.00
050400010301	Pancake Creek-Tuscarawas River	9.60	5.02	47.67	66	47.71	0	0.00	0	0.00	0	0.00
050400010302	Nimisila Reservoir-Nimisila Creek	11.99	4.34	63.84	104	52.63	3	84.67	2	63.00	2	67.78
050400010303	Lake Lucern-Nimisila Creek	16.17	10.34	36.04	74	53.08	0	0.00	0	0.00	0	0.00
050400010304	Fox Run	13.92	6.62	52.43	65	68.95	0	0.00	0	0.00	0	0.00
050400010305	Town of Canal Fulton-Tuscarawas River	10.92	6.27	42.58	86	39.27	0	0.00	0	0.00	0	0.00
050400010306	Headwaters Newman Creek	11.75	0.96	91.87	55	38.03	0	0.00	0	0.00	0	0.00
050400010307	Town of North Lawrence-Newman Creek	7.50	2.15	71.29	51	39.17	0	0.00	0	0.00	0	0.00
050400010308	Sippo Creek	12.17	2.59	78.74	59	33.89	0	0.00	0	0.00	0	0.00
050400010309	West Sippo Creek-Tuscarawas River	8.51	3.14	63.05	118	41.23	0	0.00	0	0.00	0	0.00
050400010401	Conser Run	8.57	5.22	39.09	97	49.31	0	0.00	0	0.00	0	0.00
050400010402	Middle Branch Sandy Creek	4.66	2.32	50.18	104	32.14	0	0.00	0	0.00	0	0.00
050400010403	Pipes Fork-Still Fork	11.70	5.87	49.83	99	60.23	1	57.00	1	61.00	1	51.19
050400010404	Muddy Fork	7.17	1.16	83.83	30	57.43	0	0.00	0	0.00	0	0.00
050400010405	Reeds Run-Still Fork	10.15	2.41	76.25	76	64.15	0	0.00	0	0.00	0	0.00
050400010406	Headwaters Sandy Creek	6.87	2.90	57.75	169	41.60	0	0.00	0	0.00	0	0.00
050400010501	Swartz Ditch-Middle Branch Nimishillen Creek	23.21	2.68	88.45	148	46.73	0	0.00	0	0.00	0	0.00
050400010502	East Branch Nimishillen Creek	9.93	1.36	86.28	139	26.50	0	0.00	0	0.00	0	0.00
050400010503	West Branch Nimishillen Creek	13.64	1.42	89.59	122	34.54	2	48.00	2	26.00	2	43.21
050400010504	City of Canton-Middle Branch Nimishillen Creek	8.16	1.80	77.91	71	24.39	0	0.00	0	0.00	0	0.00
050400010505	Sherrick Run-Nimishillen Creek	13.83	1.50	89.14	80	30.98	0	0.00	0	0.00	0	0.00
050400010506	Town of East Sparta-Nimishillen Creek	7.35	1.57	78.58	36	28.35	0	0.00	0	0.00	0	0.00
050400010601	Hugle Run	11.68	2.13	81.76	99	45.34	0	0.00	0	0.00	0	0.00
050400010602	Pipe Run	9.24	2.38	74.24	85	68.67	0	0.00	0	0.00	0	0.00
050400010603	Black Run	9.11	2.39	73.77	51	37.89	0	0.00	0	0.00	0	0.00
050400010604	Little Sandy Creek	6.33	3.03	52.21	94	54.24	0	0.00	0	0.00	0	0.00
050400010605	Armstrong Run-Sandy Creek	6.05	2.19	63.79	85	50.68	0	0.00	0	0.00	0	0.00
050400010606	Indian Run-Sandy Creek	4.10	4.79	0.00	156	63.24	0	0.00	0	0.00	0	0.00
050400010607	Beal Run-Sandy Creek	6.85	5.75	16.02	59	59.00	0	0.00	0	0.00	0	0.00
050400010701	Headwaters Upper Conotton Creek	1.96	1.01	48.22	32	62.04	0	0.00	0	0.00	0	0.00
050400010702	Irish Creek	0.54	0.89	0.00	20	60.88	0	0.00	0	0.00	0	0.00
050400010703	Dining Fork	0.99	1.41	0.00	21	47.19	0	0.00	0	0.00	0	0.00
050400010704	Headwaters Middle Conotton Creek	1.99	1.37	30.84	38	62.83	0	0.00	0	0.00	0	0.00
050400010705	North Fork McGuire Creek	0.70	0.83	0.00	43	74.05	0	0.00	0	0.00	0	0.00

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050400010706	McGuire Creek	0.98	0.57	41.88	32	67.29	0	0.00	0	0.00	0	0.00
050400010707	Headwaters Lower Conotton Creek	2.88	2.12	26.31	83	67.94	0	0.00	0	0.00	0	0.00
050400010801	Cold Spring Run-Indian Fork	0.82	1.01	0.00	67	65.97	0	0.00	0	0.00	0	0.00
050400010802	Pleasant Valley Run-Indian Fork	1.76	1.50	14.76	61	63.00	0	0.00	0	0.00	0	0.00
050400010803	Thompson Run-Conotton Creek	2.00	2.09	0.00	67	62.94	0	0.00	0	0.00	0	0.00
050400010804	Huff Run	1.34	1.31	2.29	35	65.40	0	0.00	0	0.00	0	0.00
050400010805	Dog Run-Conotton Creek	2.70	4.42	0.00	146	63.73	0	0.00	0	0.00	0	0.00
050400010901	Little Sugar Creek	7.72	0.92	88.11	56	29.72	0	0.00	0	0.00	0	0.00
050400010902	Town of Smithville-Sugar Creek	6.52	1.30	80.13	66	33.98	0	0.00	0	0.00	0	0.00
050400010903	North Fork Sugar Creek	2.69	0.80	70.19	30	37.54	0	0.00	0	0.00	0	0.00
050400010904	Town of Brewster-Sugar Creek	7.12	3.55	50.18	91	51.71	0	0.00	0	0.00	0	0.00
050400011001	Upper South Fork Sugar Creek	3.10	0.33	89.40	30	25.95	0	0.00	0	0.00	0	0.00
050400011002	East Branch South Fork Sugar Creek	4.44	0.35	92.21	29	41.40	0	0.00	0	0.00	0	0.00
050400011003	Indian Trail Creek	2.35	1.24	47.41	26	45.17	0	0.00	0	0.00	0	0.00
050400011004	Walnut Creek	2.56	0.87	66.21	37	38.67	0	0.00	0	0.00	0	0.00
050400011005	Lower South Fork Sugar Creek	5.46	8.86	0.00	100	61.93	2	42.00	2	41.00	2	27.53
050400011101	Headwaters Middle Fork Sugar Creek	2.17	0.22	89.71	30	32.70	0	0.00	0	0.00	0	0.00
050400011102	Misers Run-Middle Fork Sugar Creek	7.99	3.89	51.31	50	60.72	0	0.00	0	0.00	0	0.00
050400011103	Beach City Reservoir-Sugar Creek	12.99	6.54	49.64	86	52.83	0	0.00	0	0.00	0	0.00
050400011104	Broad Run	1.82	0.68	62.53	43	48.86	0	0.00	0	0.00	0	0.00
050400011105	Brandywine Creek-Sugar Creek	2.01	1.14	43.08	59	50.01	0	0.00	0	0.00	0	0.00
050400011201	Pigeon Run	4.38	2.32	47.02	26	37.59	0	0.00	0	0.00	0	0.00
050400011202	City of Massillon-Tuscarawas River	6.93	2.20	68.25	60	15.27	0	0.00	0	0.00	0	0.00
050400011203	Wolf Creek-Tuscarawas River	9.20	2.30	75.04	140	44.75	0	0.00	0	0.00	0	0.00
050400011204	Wolf Run-Tuscarawas River	1.22	1.01	16.83	56	50.03	0	0.00	0	0.00	0	0.00
050400011301	Spencer Creek	1.90	2.44	0.00	125	50.39	0	0.00	0	0.00	0	0.00
050400011302	Headwaters Stillwater Creek	1.76	1.97	0.00	65	46.47	0	0.00	0	0.00	0	0.00
050400011303	Boggs Fork	6.98	4.22	39.47	137	56.06	0	0.00	0	0.00	0	0.00
050400011304	Buttermilk Creek-Stillwater Creek	3.93	3.80	3.28	324	60.42	0	0.00	0	0.00	0	0.00
050400011401	Skull Fork	2.34	3.79	0.00	135	73.13	0	0.00	0	0.00	0	0.00
050400011402	Brushy Fork	2.12	1.79	15.80	143	68.74	0	0.00	0	0.00	0	0.00
050400011403	Craborchard Creek-Stillwater Creek	1.19	4.34	0.00	100	76.87	0	0.00	0	0.00	0	0.00
050400011501	Clear Fork	2.92	2.31	20.87	65	65.76	0	0.00	0	0.00	0	0.00
050400011502	Standingstone Fork	3.18	1.13	64.52	34	53.02	0	0.00	0	0.00	0	0.00
050400011503	Upper Little Stillwater Creek	0.45	0.30	33.33	20	61.89	0	0.00	0	0.00	0	0.00
050400011504	Middle Little Stillwater Creek	4.97	2.41	51.57	54	58.94	0	0.00	0	0.00	0	0.00
050400011505	Lower Little Stillwater Creek	5.60	3.49	37.72	47	54.01	0	0.00	0	0.00	0	0.00
050400011601	Laurel Creek	0.83	0.60	27.76	33	69.96	0	0.00	0	0.00	0	0.00
050400011602	Crooked Creek	1.50	0.99	34.17	26	54.48	0	0.00	0	0.00	0	0.00

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050400011603	Weaver Run-Stillwater Creek	2.63	2.38	9.40	46	66.40	0	0.00	0	0.00	0	0.00
050400011604	Town of Uhrichsville-Stillwater Creek	4.28	2.27	46.93	107	56.19	0	0.00	0	0.00	0	0.00
050400011701	Stone Creek	1.72	0.47	72.86	28	45.54	0	0.00	0	0.00	0	0.00
050400011702	Oldtown Creek	2.34	0.13	94.57	8	67.16	0	0.00	0	0.00	0	0.00
050400011703	Beaverdam Creek	4.87	1.95	59.94	47	56.29	0	0.00	0	0.00	0	0.00
050400011704	Pone Run-Tuscarawas River	1.42	2.19	0.00	49	37.99	0	0.00	0	0.00	0	0.00
050400011801	Dunlap Creek	1.23	0.66	46.43	32	63.70	0	0.00	0	0.00	0	0.00
050400011802	Mud Run-Tuscarawas River	1.44	1.24	14.30	90	44.99	0	0.00	0	0.00	0	0.00
050400011803	Buckhorn Creek	1.26	0.26	78.95	23	52.84	0	0.00	0	0.00	0	0.00
050400011804	Blue Ridge Run-Tuscarawas River	2.53	2.05	18.92	45	49.37	0	0.00	0	0.00	0	0.00
050400011901	Evans Creek	2.19	0.57	74.19	35	44.61	0	0.00	0	0.00	0	0.00
050400011902	West Fork White Eyes Creek	3.06	2.04	33.27	45	62.62	0	0.00	0	0.00	0	0.00
050400011903	White Eyes Creek	2.59	0.97	62.37	60	47.25	0	0.00	0	0.00	0	0.00
050400011904	Morgan Run-Tuscarawas River	3.06	2.83	7.53	124	40.18	0	0.00	0	0.00	0	0.00
050400020101	Marsh Run	44.54	1.27	97.15	92	54.59	0	0.00	0	0.00	0	0.00
050400020102	Headwaters Black Fork Mohican River	25.83	0.94	96.37	217	45.40	0	0.00	0	0.00	0	0.00
050400020103	Brubaker Creek	16.44	1.62	90.16	106	51.98	0	0.00	0	0.00	0	0.00
050400020104	Whetstone Creek	17.70	1.62	90.82	81	55.69	2	63.25	2	58.00	2	58.79
050400020105	Shipp Creek-Black Fork Mohican River	24.81	5.04	79.69	525	60.29	2	66.00	2	92.50	2	74.79
050400020201	Village of Pavonia-Black Fork Mohican River	11.91	5.05	57.61	128	58.65	1	31.00	1	13.00	1	15.53
050400020202	Seymour Run-Black Fork	4.24	2.94	30.59	79	65.01	0	0.00	0	0.00	0	0.00
050400020203	Headwaters Rocky Fork	12.51	1.22	90.22	107	38.99	0	0.00	0	0.00	0	0.00
050400020204	Outlet Rocky Fork	5.54	0.61	88.90	105	42.86	1	55.00	1	87.00	1	70.46
050400020205	Charles Mill-Black Fork Mohican River	4.49	3.33	25.90	49	70.94	0	0.00	0	0.00	0	0.00
050400020301	Headwaters Clear Fork Mohican River	9.37	1.39	85.12	252	55.41	0	0.00	0	0.00	0	0.00
050400020302	Cedar Fork	6.42	0.65	89.82	255	50.59	0	0.00	0	0.00	0	0.00
050400020303	Town of Lexington-Clear Fork Mohican River	6.12	1.75	71.35	150	47.30	0	0.00	0	0.00	0	0.00
050400020401	Honey Creek-Clear Fork Mohican River	2.20	0.23	89.39	35	43.03	0	0.00	0	0.00	0	0.00
050400020402	Possum Run	1.77	0.74	57.95	31	46.02	0	0.00	0	0.00	0	0.00
050400020403	Slater Run-Clear Fork Mohican River	1.02	0.10	90.37	13	36.40	0	0.00	0	0.00	0	0.00
050400020404	Pine Run	2.60	0.15	94.03	10	40.65	0	0.00	0	0.00	0	0.00
050400020405	Switzer Creek-Clear Fork Mohican River	2.61	1.03	60.60	34	59.88	0	0.00	0	0.00	0	0.00
050400020501	Upper Muddy Fork Mohican River	11.53	2.21	80.83	238	55.85	1	76.00	1	97.00	1	96.34
050400020502	Middle Muddy Fork Mohican River	7.53	1.64	78.24	139	59.30	0	0.00	0	0.00	0	0.00
050400020503	Lower Muddy Fork Mohican River	15.48	6.83	55.90	281	48.99	0	0.00	0	0.00	0	0.00
050400020601	Lang Creek	11.29	1.23	89.14	94	47.77	0	0.00	0	0.00	0	0.00
050400020602	Orange Creek	11.62	1.77	84.78	199	52.34	0	0.00	0	0.00	0	0.00
050400020603	Katotawa Creek	6.65	1.42	78.67	45	55.93	0	0.00	0	0.00	0	0.00
050400020604	Oldtown Run	3.90	0.79	79.85	46	36.50	0	0.00	0	0.00	0	0.00

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050400020605	Jerome Fork-Mohican River	13.70	4.69	65.74	211	57.44	0	0.00	0	0.00	0	0.00
050400020606	Glenn Run-Jerome Fork Mohican River	11.24	5.87	47.73	129	53.95	0	0.00	0	0.00	0	0.00
050400020701	Grab Run	9.77	1.42	85.49	151	53.80	1	78.00	1	76.00	1	75.98
050400020702	Mohicanville Dam-Lake Fork Mohican River	3.20	2.59	19.00	122	59.90	0	0.00	0	0.00	0	0.00
050400020703	Plum Run-Lake Fork Mohican River	6.81	2.07	69.54	125	53.39	0	0.00	0	0.00	0	0.00
050400020801	Honey Creek	3.49	1.31	62.63	44	48.49	0	0.00	0	0.00	0	0.00
050400020802	Town of Perrysville-Black Fork Mohican River	4.48	2.54	43.29	63	52.09	0	0.00	0	0.00	0	0.00
050400020803	Big Run-Black Fork Mohican River	2.87	0.80	72.09	39	43.60	0	0.00	0	0.00	0	0.00
050400020804	Sigafoos Run-Mohican River	1.18	0.08	93.09	13	45.80	0	0.00	0	0.00	0	0.00
050400020805	Negro Run-Mohican River	0.90	0.09	90.49	17	71.76	0	0.00	0	0.00	0	0.00
050400020806	Flat Run-Mohican River	2.25	0.30	86.87	37	58.95	0	0.00	0	0.00	0	0.00
050400030101	Headwaters North Branch Kokosing River	8.56	0.73	91.42	295	54.94	3	66.17	1	87.00	1	93.36
050400030102	East Branch Kokosing River	8.04	1.66	79.29	92	47.05	0	0.00	0	0.00	0	0.00
050400030103	Job Run-North Branch Kokosing River	7.48	1.26	83.18	58	38.25	0	0.00	0	0.00	0	0.00
050400030201	Headwaters Kokosing River	14.94	2.23	85.04	506	50.37	0	0.00	0	0.00	0	0.00
050400030202	Mile Run-Kokosing River	12.04	2.46	79.60	398	63.11	0	0.00	0	0.00	0	0.00
050400030203	Granny Creek-Kokosing River	9.88	1.03	89.60	105	60.56	0	0.00	0	0.00	0	0.00
050400030301	Dry Creek	9.39	0.80	91.51	201	49.59	0	0.00	0	0.00	0	0.00
050400030302	Armstrong Run-Kokosing River	4.96	0.93	81.35	25	61.20	0	0.00	0	0.00	0	0.00
050400030303	Big Run	12.88	0.77	94.03	76	46.38	0	0.00	0	0.00	0	0.00
050400030304	Delano Run-Kokosing River	7.64	0.67	91.19	67	38.88	3	46.17	3	52.33	3	61.43
050400030305	Little Schenck Creek	4.56	1.05	76.92	30	55.11	0	0.00	0	0.00	0	0.00
050400030306	Schenck Creek	3.82	0.59	84.57	42	47.33	0	0.00	0	0.00	0	0.00
050400030307	Indianfield Run-Kokosing River	2.79	0.77	72.28	46	45.88	0	0.00	0	0.00	0	0.00
050400030401	Little Jelloway Creek	1.12	0.51	54.06	27	52.50	0	0.00	0	0.00	0	0.00
050400030402	Jelloway Creek	3.54	0.46	87.09	79	48.95	0	0.00	0	0.00	0	0.00
050400030403	Brush Run-Kokosing River	1.25	0.41	66.89	47	57.81	0	0.00	0	0.00	0	0.00
050400030501	Headwaters Killbuck Creek	12.18	3.78	69.00	166	45.88	0	0.00	0	0.00	0	0.00
050400030502	Little Killbuck Creek-Killbuck Creek	9.52	4.75	50.06	159	54.16	1	21.50	1	13.00	1	2.04
050400030503	Rathburn Run-Little Killbuck Creek	3.80	0.50	86.81	55	61.95	0	0.00	0	0.00	0	0.00
050400030504	Cedar Run-Killbuck Creek	4.87	2.02	58.56	124	57.95	0	0.00	0	0.00	0	0.00
050400030505	Clear Creek-Killbuck Creek	6.70	1.59	76.33	60	32.48	0	0.00	0	0.00	0	0.00
050400030601	Little Apple Creek	3.45	1.28	62.76	40	38.66	0	0.00	0	0.00	0	0.00
050400030602	Apple Creek	3.72	1.22	67.20	97	34.54	0	0.00	0	0.00	0	0.00
050400030603	Shreve Creek	11.01	6.52	40.74	59	57.75	1	68.50	1	87.00	1	82.64
050400030604	Jennings Ditch-Killbuck Creek	16.99	12.48	26.53	187	51.04	4	51.50	4	30.00	4	38.38
050400030605	North Branch Salt Creek	5.07	1.37	73.02	37	32.08	0	0.00	0	0.00	0	0.00
050400030606	Salt Creek	3.58	1.33	62.75	56	46.15	0	0.00	0	0.00	0	0.00
050400030607	Tea Run-Killbuck Creek	8.91	7.27	18.41	77	59.00	0	0.00	0	0.00	0	0.00

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050400030701	Paint Creek	2.21	0.12	94.75	21	49.39	0	0.00	0	0.00	0	0.00
050400030702	Martins Creek	3.81	0.37	90.28	21	42.72	0	0.00	0	0.00	0	0.00
050400030703	Honey Run-Killbuck Creek	5.33	3.91	26.70	33	44.38	1	72.00	1	91.00	1	75.54
050400030704	Black Creek	2.36	0.92	61.06	41	60.55	0	0.00	0	0.00	0	0.00
050400030705	Shrimplin Creek-Killbuck Creek	4.01	2.01	49.80	108	49.66	0	0.00	0	0.00	0	0.00
050400030801	Wolf Creek	4.10	1.84	55.23	31	70.45	0	0.00	0	0.00	0	0.00
050400030802	Headwaters Doughty Creek	2.87	0.40	85.99	31	40.13	0	0.00	0	0.00	0	0.00
050400030803	Bucks Run-Doughty Creek	2.82	2.32	17.84	72	61.51	0	0.00	0	0.00	0	0.00
050400030804	Big Run-Killbuck Creek	8.63	6.60	23.48	75	63.95	0	0.00	0	0.00	0	0.00
050400030805	Bucklew Run-Killbuck Creek	6.07	5.50	9.42	96	72.77	0	0.00	0	0.00	0	0.00
050400030901	Mohawk Creek	4.64	2.06	55.58	65	75.04	0	0.00	0	0.00	0	0.00
050400030902	Dutch Run-Walhonding River	1.40	2.95	0.00	41	76.73	0	0.00	0	0.00	0	0.00
050400030903	Beaver Run	4.05	0.31	92.32	18	46.83	0	0.00	0	0.00	0	0.00
050400030904	Simmons Run	4.58	1.22	73.33	41	57.78	0	0.00	0	0.00	0	0.00
050400030905	Darling Run-Walhonding River	2.36	1.91	19.36	33	52.45	0	0.00	0	0.00	0	0.00
050400030906	Headwaters Mill Creek	2.69	0.68	74.77	41	45.81	0	0.00	0	0.00	0	0.00
050400030907	Spoon Creek-Mill Creek	3.29	1.45	55.99	69	44.61	0	0.00	0	0.00	0	0.00
050400030908	Crooked Creek-Walhonding River	3.23	2.72	16.00	55	64.14	0	0.00	0	0.00	0	0.00
050400040101	Headwaters Wakatomika Creek	3.06	0.93	69.46	85	49.62	0	0.00	0	0.00	0	0.00
050400040102	Winding Fork	3.22	0.77	76.11	82	60.08	0	0.00	0	0.00	0	0.00
050400040103	Brushy Fork	4.01	0.40	90.03	70	58.53	0	0.00	0	0.00	0	0.00
050400040104	Jug Run-Wakatomika Creek	1.07	0.68	36.37	71	75.27	2	83.00	2	71.00	2	57.71
050400040201	Black Run-Wakatomika Creek	9.77	1.43	85.36	135	47.97	0	0.00	0	0.00	0	0.00
050400040202	Mill Fork	4.77	2.70	43.54	110	64.21	0	0.00	0	0.00	0	0.00
050400040203	Little Wakatomika Creek	3.23	0.70	78.43	90	54.82	0	0.00	0	0.00	0	0.00
050400040204	Town of Frazeysburg-Wakatomika Creek	8.25	2.02	75.50	87	32.98	0	0.00	0	0.00	0	0.00
050400040301	Robinson Run-Muskingum River	2.25	3.12	0.00	108	58.16	0	0.00	0	0.00	0	0.00
050400040302	Village of Adams Mills-Muskingum River	3.12	5.95	0.00	63	56.61	0	0.00	0	0.00	0	0.00
050400040303	North Branch Symmes Creek	1.34	1.61	0.00	25	51.11	0	0.00	0	0.00	0	0.00
050400040304	South Branch Symmes Creek-Symmes Creek	1.03	1.31	0.00	41	68.72	0	0.00	0	0.00	0	0.00
050400040305	Blount Run-Muskingum River	1.94	1.81	6.62	149	53.10	0	0.00	0	0.00	0	0.00
050400040401	Valley Run	8.27	0.44	94.74	79	49.52	0	0.00	0	0.00	0	0.00
050400040402	Headwaters Jonathon Creek	14.44	0.77	94.70	79	41.62	0	0.00	0	0.00	0	0.00
050400040403	Turkey Run	5.08	1.03	79.66	43	61.67	0	0.00	0	0.00	0	0.00
050400040404	Buckeye Fork	3.66	0.34	90.78	39	64.44	0	0.00	0	0.00	0	0.00
050400040405	Kent Run	3.14	0.30	90.54	44	38.20	0	0.00	0	0.00	0	0.00
050400040406	Thompson Run	1.53	0.48	68.48	35	47.13	0	0.00	0	0.00	0	0.00
050400040407	Painter Creek-Jonathon Creek	5.37	0.52	90.29	163	45.29	0	0.00	0	0.00	0	0.00
050400040501	Black Fork	0.65	0.28	56.51	65	48.88	0	0.00	0	0.00	0	0.00

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050400040502	Upper Moxahala Creek	3.81	1.34	64.85	111	48.75	0	0.00	0	0.00	0	0.00
050400040503	Middle Moxahala Creek	3.15	0.54	82.80	55	53.79	0	0.00	0	0.00	0	0.00
050400040504	Lower Moxahala Creek	1.90	1.64	13.45	112	52.30	0	0.00	0	0.00	0	0.00
050400040601	Little Salt Creek	2.49	0.31	87.51	29	38.02	0	0.00	0	0.00	0	0.00
050400040602	Headwaters Salt Creek	2.00	0.41	79.56	70	54.00	0	0.00	0	0.00	0	0.00
050400040603	Buffalo Fork	0.78	0.64	18.37	41	61.10	0	0.00	0	0.00	0	0.00
050400040604	Boggs Creek	4.62	0.46	89.99	65	42.60	0	0.00	0	0.00	0	0.00
050400040605	Manns Fork Salt Creek	0.64	0.14	77.58	26	64.79	0	0.00	0	0.00	0	0.00
050400040606	Mouth Salt Creek	0.91	0.97	0.00	44	47.82	0	0.00	0	0.00	0	0.00
050400040701	Mans Fork	2.13	0.26	88.01	33	68.15	0	0.00	0	0.00	0	0.00
050400040702	Headwaters Meigs Creek	1.55	0.43	72.40	64	66.26	0	0.00	0	0.00	0	0.00
050400040703	Dyes Fork	3.32	0.62	81.20	137	61.24	0	0.00	0	0.00	0	0.00
050400040704	Fourmile Run-Meigs Creek	0.65	0.09	85.81	17	59.52	0	0.00	0	0.00	0	0.00
050400040801	Brush Creek	0.67	1.11	0.00	94	68.05	0	0.00	0	0.00	0	0.00
050400040802	Flat Run-Muskingum River	1.14	0.27	76.53	23	49.36	0	0.00	0	0.00	0	0.00
050400040803	Duncan Run-Muskingum River	0.77	0.29	61.94	28	45.56	0	0.00	0	0.00	0	0.00
050400040804	Island Run	1.08	0.04	95.84	20	68.55	0	0.00	0	0.00	0	0.00
050400040805	Blue Rock Creek-Muskingum River	0.75	0.73	2.12	40	35.19	0	0.00	0	0.00	0	0.00
050400040806	Oilspring Run-Muskingum River	1.20	0.48	59.59	27	27.38	0	0.00	0	0.00	0	0.00
050400040807	Bald Eagle Run	0.35	0.60	0.00	10	47.64	0	0.00	0	0.00	0	0.00
050400040808	Bell Creek-Muskingum River	0.44	0.15	65.13	19	30.18	0	0.00	0	0.00	0	0.00
050400040809	Olney Run-Muskingum River	0.47	0.16	66.49	13	43.72	0	0.00	0	0.00	0	0.00
050400040901	South West Branch Wolf Creek	0.70	1.16	0.00	40	57.06	0	0.00	0	0.00	0	0.00
050400040902	Headwaters South Branch Wolf Creek	0.99	0.50	49.07	62	59.99	0	0.00	0	0.00	0	0.00
050400040903	Plumb Run-South Branch Wolf Creek	0.64	0.28	56.47	22	50.56	0	0.00	0	0.00	0	0.00
050400041001	Headwaters West Branch Wolf Creek	1.53	0.33	78.11	80	50.85	0	0.00	0	0.00	0	0.00
050400041002	Aldridge Run-West Branch Wolf Creek	0.47	0.45	4.00	48	60.06	0	0.00	0	0.00	0	0.00
050400041003	Coal Run	0.50	0.20	59.59	32	61.94	0	0.00	0	0.00	0	0.00
050400041004	Hayward Run-Wolf Creek	0.54	0.51	4.50	66	57.15	0	0.00	0	0.00	0	0.00
050400041101	Headwaters Olive Green Creek	0.82	0.10	87.29	15	60.93	0	0.00	0	0.00	0	0.00
050400041102	Keith Fork	0.92	0.02	97.68	11	70.09	0	0.00	0	0.00	0	0.00
050400041103	Little Olive Green Creek	0.46	0.03	93.63	7	58.57	0	0.00	0	0.00	0	0.00
050400041104	Reasoners Run-Olive Green Creek	0.51	0.23	55.36	9	69.43	0	0.00	0	0.00	0	0.00
050400041105	Congress Run-Muskingum River	0.94	0.15	83.87	21	27.45	0	0.00	0	0.00	0	0.00
050400041201	Big Run	0.91	0.10	89.04	33	69.73	0	0.00	0	0.00	0	0.00
050400041202	Rainbow Creek	0.49	0.10	80.33	23	32.77	0	0.00	0	0.00	0	0.00
050400041203	Cat Creek-Muskingum River	0.94	0.17	81.77	46	31.99	0	0.00	0	0.00	0	0.00
050400041204	Devol Run-Muskingum River	0.93	0.14	84.60	20	28.69	0	0.00	0	0.00	0	0.00
050400050101	Headwaters Seneca Fork	0.77	0.11	85.08	35	59.24	0	0.00	0	0.00	0	0.00

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050400050102	Beaver Creek	1.43	0.69	51.82	50	56.82	0	0.00	0	0.00	0	0.00
050400050103	Glady Run-Seneca Fork	0.89	0.36	60.02	46	57.28	0	0.00	0	0.00	0	0.00
050400050104	Depue Run-Seneca Fork	1.08	0.40	62.62	24	54.62	0	0.00	0	0.00	0	0.00
050400050105	Opossum Run-Seneca Fork	1.90	2.68	0.00	103	55.81	0	0.00	0	0.00	0	0.00
050400050201	Yoker Creek	2.13	2.56	0.00	106	63.16	0	0.00	0	0.00	0	0.00
050400050202	Headwaters Collins Fork	2.18	1.28	41.04	136	56.90	0	0.00	0	0.00	0	0.00
050400050203	South Fork Buffalo Creek-Buffalo Creek	1.66	1.35	18.93	44	56.74	0	0.00	0	0.00	0	0.00
050400050204	North Fork Buffalo Creek-Buffalo Creek	2.14	1.24	42.15	78	47.24	0	0.00	0	0.00	0	0.00
050400050205	Crane Run-Buffalo Fork	2.93	3.66	0.00	72	61.70	0	0.00	0	0.00	0	0.00
050400050206	Chapman Run	1.31	2.31	0.00	74	45.38	0	0.00	0	0.00	0	0.00
050400050207	Trail Run-Wills Creek	3.39	7.26	0.00	155	37.35	0	0.00	0	0.00	0	0.00
050400050301	Headwaters Leatherwood Creek	2.32	1.70	26.63	141	54.54	0	0.00	0	0.00	0	0.00
050400050302	Hawkins Run-Leatherwood Creek	2.27	4.33	0.00	178	57.27	0	0.00	0	0.00	0	0.00
050400050401	Brushy Fork	2.13	1.80	15.61	44	59.80	0	0.00	0	0.00	0	0.00
050400050402	Headwaters Salt Fork	2.44	3.37	0.00	171	72.84	0	0.00	0	0.00	0	0.00
050400050403	Clear Fork	1.08	2.86	0.00	29	72.83	0	0.00	0	0.00	0	0.00
050400050404	Rocky Fork	0.50	2.64	0.00	57	76.67	0	0.00	0	0.00	0	0.00
050400050405	Salt Fork Lake-Sugartree Fork	0.64	1.09	0.00	51	64.92	0	0.00	0	0.00	0	0.00
050400050406	Beeham Run-Salt Fork	0.53	1.34	0.00	35	59.95	0	0.00	0	0.00	0	0.00
050400050501	North Crooked Creek	1.25	1.06	15.40	53	38.92	0	0.00	0	0.00	0	0.00
050400050502	Headwaters Crooked Creek	1.21	1.91	0.00	43	43.30	0	0.00	0	0.00	0	0.00
050400050503	Peters Creek-Crooked Creek	1.41	2.76	0.00	86	52.04	0	0.00	0	0.00	0	0.00
050400050504	Sarchet Run-Wills Creek	1.37	2.66	0.00	56	54.66	0	0.00	0	0.00	0	0.00
050400050505	Indian Camp Run	2.38	3.45	0.00	31	66.70	0	0.00	0	0.00	0	0.00
050400050506	Headwaters Birds Run	0.46	1.01	0.00	31	69.72	0	0.00	0	0.00	0	0.00
050400050507	Johnson Fork-Birds Run	0.65	1.58	0.00	40	66.84	0	0.00	0	0.00	0	0.00
050400050508	Wolf Run-Wills Creek	1.29	2.62	0.00	65	66.70	0	0.00	0	0.00	0	0.00
050400050601	Bacon Run	3.88	2.81	27.64	55	64.28	0	0.00	0	0.00	0	0.00
050400050602	Twomile Run-Wills Creek	3.73	3.51	5.82	97	47.70	0	0.00	0	0.00	0	0.00
050400050603	White Eyes Creek	2.98	2.06	30.90	80	66.91	0	0.00	0	0.00	0	0.00
050400050604	Wills Creek Dam-Wills Creek	5.71	7.22	0.00	123	69.80	4	37.75	4	38.50	0	0.00
050400050605	Mouth Wills Creek	1.15	1.41	0.00	37	62.82	0	0.00	0	0.00	0	0.00
050400060101	Otter Fork Licking River	28.29	1.18	95.81	181	39.37	0	0.00	0	0.00	0	0.00
050400060102	Headwaters North Fork Licking River	22.81	2.00	91.24	292	45.27	0	0.00	0	0.00	0	0.00
050400060103	Sycamore Creek	19.79	1.91	90.35	193	52.10	0	0.00	0	0.00	0	0.00
050400060104	Vance Creek-North Fork Licking River	26.00	2.22	91.48	181	52.93	0	0.00	0	0.00	0	0.00
050400060201	Lake Fork Licking River	21.93	2.13	90.30	342	52.40	0	0.00	0	0.00	0	0.00
050400060202	Clear Fork Licking River	10.55	0.63	94.04	91	58.77	0	0.00	0	0.00	0	0.00
050400060203	Dog Hollow Run-North Fork Licking River	5.27	0.47	91.09	60	44.13	0	0.00	0	0.00	0	0.00

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050400060204	Dry Creek	8.99	0.63	93.04	86	34.58	0	0.00	0	0.00	0	0.00
050400060205	Log Pond Run-North Fork Licking River	7.35	0.72	90.15	37	37.65	0	0.00	0	0.00	0	0.00
050400060301	Headwaters Raccoon Creek	28.41	0.60	97.90	148	33.24	0	0.00	0	0.00	0	0.00
050400060302	Lobdell Creek	22.54	0.58	97.42	101	38.02	0	0.00	0	0.00	0	0.00
050400060303	Moots Run-Raccoon Creek	16.21	0.77	95.26	171	41.10	0	0.00	0	0.00	0	0.00
050400060304	Salt Run-Raccoon Creek	6.80	0.48	92.99	69	37.03	0	0.00	0	0.00	0	0.00
050400060401	Muddy Fork	39.89	1.27	96.83	122	38.88	0	0.00	0	0.00	0	0.00
050400060402	Headwaters South Fork Licking River	19.33	0.81	95.80	96	48.20	0	0.00	0	0.00	0	0.00
050400060403	Buckeye Lake	18.42	1.00	94.60	119	28.98	0	0.00	0	0.00	0	0.00
050400060404	Buckeye Lake Reservoir Feeder	29.71	0.62	97.90	45	35.00	0	0.00	0	0.00	0	0.00
050400060405	Town of Kirkersville-South Fork Licking River	24.61	1.29	94.74	118	46.73	0	0.00	0	0.00	0	0.00
050400060406	Bell Run-South Fork Licking River	33.86	0.82	97.58	97	34.64	1	54.50	0	0.00	0	0.00
050400060407	Ramp Creek	11.56	0.27	97.69	38	44.66	0	0.00	0	0.00	0	0.00
050400060408	Dutch Fork	19.27	0.62	96.78	49	39.29	0	0.00	0	0.00	0	0.00
050400060409	Beaver Run-South Fork Licking River	20.28	1.25	93.84	115	46.08	0	0.00	0	0.00	0	0.00
050400060501	Claylick Creek	3.63	0.21	94.11	14	38.30	0	0.00	0	0.00	0	0.00
050400060502	Lost Run	4.72	0.50	89.48	47	41.68	0	0.00	0	0.00	0	0.00
050400060503	Rocky Fork	3.93	0.43	88.96	63	51.98	0	0.00	0	0.00	0	0.00
050400060504	Bowling Green Run-Licking River	5.83	1.38	76.30	78	45.00	0	0.00	0	0.00	0	0.00
050400060601	Brushy Fork	2.61	0.25	90.43	23	63.60	0	0.00	0	0.00	0	0.00
050400060602	Big Run	8.05	1.71	78.75	66	54.21	0	0.00	0	0.00	0	0.00
050400060603	Dillon Lake-Licking River	3.26	5.17	0.00	157	49.89	0	0.00	0	0.00	0	0.00
050400060604	Timber Run-Licking River	4.01	0.51	87.32	48	47.80	0	0.00	0	0.00	0	0.00
050600010101	Cottonwood Ditch	54.58	0.55	98.99	49	33.26	0	0.00	0	0.00	0	0.00
050600010102	Headwaters Scioto River	50.58	1.74	96.56	407	45.10	0	0.00	0	0.00	0	0.00
050600010103	Taylor Creek	22.61	2.89	87.22	168	56.07	1	73.00	2	63.50	1	72.02
050600010104	Silver Creek-Scioto River	36.43	1.39	96.18	183	47.55	0	0.00	0	0.00	0	0.00
050600010201	Headwaters Rush Creek	29.32	1.87	93.61	491	50.30	0	0.00	0	0.00	0	0.00
050600010202	McDonald Creek	33.67	0.53	98.42	45	37.81	0	0.00	0	0.00	0	0.00
050600010203	Dudley Run-Rush Creek	34.19	1.00	97.09	168	41.14	0	0.00	0	0.00	0	0.00
050600010301	Rock Fork	50.36	0.57	98.87	121	39.80	0	0.00	0	0.00	0	0.00
050600010302	Headwaters Little Scioto River	49.69	1.02	97.94	201	42.37	0	0.00	0	0.00	0	0.00
050600010303	City of Marion-Little Scioto River	45.74	3.81	91.67	150	32.91	0	0.00	0	0.00	0	0.00
050600010304	Honey Creek-Little Scioto River	35.29	1.17	96.68	167	31.40	0	0.00	0	0.00	0	0.00
050600010401	Gander Run-Scioto River	27.65	1.28	95.36	83	43.59	0	0.00	0	0.00	0	0.00
050600010402	Panther Creek	34.80	2.40	93.11	156	52.53	0	0.00	0	0.00	0	0.00
050600010403	Wolf Creek-Scioto River	29.94	2.44	91.84	159	58.48	5	63.20	4	51.75	2	49.90
050600010404	Wildcat Creek	31.30	1.52	95.13	98	57.00	0	0.00	0	0.00	0	0.00
050600010405	Town of La Rue-Scioto River	27.70	1.86	93.30	149	35.06	1	40.00	1	44.00	1	17.23

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050600010406	Glade Run-Scioto River	48.86	6.52	86.65	293	45.44	2	48.75	2	46.50	2	35.90
050600010501	Patton Run	39.62	0.46	98.84	68	37.38	0	0.00	0	0.00	0	0.00
050600010502	Davids Run-Scioto River	22.12	0.26	98.84	57	32.41	0	0.00	0	0.00	0	0.00
050600010503	Kebler Run	38.33	0.28	99.27	42	51.39	0	0.00	0	0.00	0	0.00
050600010504	Fulton Creek	38.50	0.49	98.73	204	42.78	0	0.00	0	0.00	0	0.00
050600010505	Ottawa Creek-Scioto River	37.40	0.31	99.16	139	41.41	0	0.00	0	0.00	0	0.00
050600010601	Upper Mill Creek	19.44	2.49	87.21	183	55.96	0	0.00	0	0.00	0	0.00
050600010602	Middle Mill Creek	25.17	1.04	95.88	433	46.72	0	0.00	0	0.00	0	0.00
050600010603	Blues Creek	32.21	1.15	96.42	236	40.06	0	0.00	0	0.00	0	0.00
050600010604	Lower Mill Creek	27.49	0.51	98.14	227	42.53	0	0.00	0	0.00	0	0.00
050600010701	Headwaters Bokes Creek	43.09	0.98	97.73	199	45.62	0	0.00	0	0.00	0	0.00
050600010702	Brush Run-Bokes Creek	25.71	1.83	92.87	123	44.15	0	0.00	0	0.00	0	0.00
050600010703	Smith Run-Bokes Creek	34.48	0.92	97.34	178	43.05	0	0.00	0	0.00	0	0.00
050600010704	Moors Run-Scioto River	21.42	0.47	97.82	94	45.45	0	0.00	0	0.00	0	0.00
050600010801	Headwaters Olentangy River	25.67	1.50	94.15	298	47.52	0	0.00	0	0.00	0	0.00
050600010802	Mud Run	55.64	1.53	97.25	130	40.69	0	0.00	0	0.00	0	0.00
050600010803	Flat Run	23.45	1.30	94.47	317	49.49	0	0.00	0	0.00	0	0.00
050600010804	Town of Caledonia-Olentangy River	32.05	3.36	89.51	260	61.20	0	0.00	0	0.00	0	0.00
050600010901	Shaw Creek	28.24	1.13	96.00	259	48.67	0	0.00	0	0.00	0	0.00
050600010902	Headwaters Whetstone Creek	13.89	1.21	91.26	476	52.84	0	0.00	0	0.00	0	0.00
050600010903	Claypool Run-Whetstone Creek	32.18	0.83	97.41	123	51.50	0	0.00	0	0.00	0	0.00
050600011001	Otter Creek-Olentangy River	47.80	1.81	96.21	292	39.56	0	0.00	0	0.00	0	0.00
050600011002	Grave Creek	54.75	0.90	98.36	180	35.61	0	0.00	0	0.00	0	0.00
050600011003	Beaver Run-Olentangy River	34.59	1.65	95.24	262	50.68	0	0.00	0	0.00	0	0.00
050600011004	Qu Qua Creek	30.91	0.87	97.17	95	44.49	0	0.00	0	0.00	0	0.00
050600011005	Brandige Run-Olentangy River	35.74	0.82	97.70	153	55.61	1	61.50	1	67.00	1	64.89
050600011006	Indian Run-Olentangy River	36.71	2.52	93.14	132	51.88	9	59.17	4	58.50	4	64.74
050600011007	Delaware Run-Olentangy River	33.18	0.34	98.97	123	51.52	0	0.00	0	0.00	0	0.00
050600011101	Deep Run-Olentangy River	22.90	0.29	98.72	166	32.35	1	45.00	1	37.00	1	43.05
050600011102	Rush Run-Olentangy River	13.99	0.34	97.56	70	34.91	7	46.00	6	29.50	5	31.47
050600011103	Mouth Olentangy River	7.33	0.13	98.26	36	9.89	2	36.00	2	23.50	2	21.39
050600011201	Eversole Run	20.47	0.23	98.88	50	29.79	3	45.33	0	0.00	0	0.00
050600011202	O'Shaughnessy Dam-Scioto River	12.81	0.52	95.92	57	29.46	4	57.25	1	87.00	1	80.16
050600011203	Indian Run	36.36	0.75	97.93	44	23.14	6	42.58	1	46.00	1	42.47
050600011204	Hayden Run-Scioto River	22.50	0.18	99.19	82	19.55	13	41.19	3	54.67	3	63.61
050600011205	Dry Run-Scioto River	11.86	0.22	98.18	22	12.30	1	71.00	1	39.00	1	50.39
050600011301	Culver Creek	30.28	1.87	93.83	165	54.39	0	0.00	0	0.00	0	0.00
050600011302	Headwaters Big Walnut Creek	17.33	1.38	92.06	515	55.91	2	81.00	2	80.50	2	85.11
050600011303	Rattlesnake Creek	32.56	0.55	98.32	92	50.99	0	0.00	0	0.00	0	0.00

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050600011304	Perfect Creek-Big Walnut Creek	32.83	1.06	96.79	80	47.51	0	0.00	0	0.00	0	0.00
050600011305	Little Walnut Creek	22.09	0.86	96.10	179	45.05	0	0.00	0	0.00	0	0.00
050600011306	Prairie Run-Big Walnut Creek	25.06	1.80	92.84	53	44.60	0	0.00	0	0.00	0	0.00
050600011307	Duncan Run	38.13	0.56	98.53	78	37.70	0	0.00	0	0.00	0	0.00
050600011308	Hoover Reservoir-Big Walnut Creek	24.59	1.45	94.09	161	34.12	1	49.00	1	60.00	1	58.42
050600011401	West Branch Alum Creek	32.56	0.72	97.78	188	52.78	0	0.00	0	0.00	0	0.00
050600011402	Headwaters Alum Creek	12.32	0.65	94.75	217	45.88	0	0.00	0	0.00	0	0.00
050600011403	Big Run-Alum Creek	28.50	1.05	96.30	107	60.40	0	0.00	0	0.00	0	0.00
050600011404	Alum Creek Dam-Alum Creek	14.96	0.57	96.18	94	45.78	5	65.50	2	72.00	2	67.74
050600011501	Rocky Fork Creek	30.18	0.52	98.29	106	38.21	5	67.90	5	48.80	4	58.48
050600011502	City of Gahanna-Big Walnut Creek	21.21	0.46	97.84	55	35.49	5	50.20	5	49.20	5	41.92
050600011503	Headwaters Blacklick Creek	27.22	0.80	97.05	194	38.28	1	26.00	1	23.00	1	10.68
050600011504	Town of Brice-Blacklick Creek	18.74	0.64	96.59	54	10.64	0	0.00	0	0.00	0	0.00
050600011505	Mason Run-Big Walnut Cr.	13.68	0.44	96.76	103	26.83	6	46.92	6	42.83	6	40.90
050600011601	Westerville Reservoir-Alum Creek	16.07	0.28	98.23	74	18.04	2	51.50	2	47.00	2	33.75
050600011602	Bliss Run-Alum Creek	13.69	0.27	98.00	96	20.82	12	48.75	12	37.92	12	32.58
050600011603	Town of Lockbourne-Alum Creek	13.79	0.60	95.65	103	28.23	5	41.10	5	34.40	5	37.85
050600011701	Pawpaw Creek	23.35	0.96	95.90	68	45.71	3	52.00	3	37.00	1	59.21
050600011702	Headwaters Walnut Creek	22.63	0.21	99.07	56	31.28	0	0.00	0	0.00	0	0.00
050600011703	Poplar Creek	23.76	0.56	97.66	60	35.20	1	17.50	1	6.00	1	8.25
050600011704	Sycamore Creek	25.65	1.08	95.78	96	42.95	0	0.00	0	0.00	0	0.00
050600011705	Town of Carroll-Walnut Creek	21.36	0.79	96.28	112	28.47	4	35.00	4	25.25	3	23.14
050600011801	Georges Creek	27.05	2.68	90.11	80	15.13	0	0.00	0	0.00	0	0.00
050600011802	Tussing Ditch-Walnut Creek	16.92	1.01	94.06	75	21.59	0	0.00	0	0.00	0	0.00
050600011803	Turkey Run	18.65	0.05	99.73	5	37.20	0	0.00	0	0.00	0	0.00
050600011804	Little Walnut Creek	24.93	0.30	98.80	71	33.56	0	0.00	0	0.00	0	0.00
050600011805	Big Run-Walnut Creek	19.57	0.69	96.49	263	29.91	7	55.57	7	55.00	6	43.09
050600011806	Mud Run-Walnut Creek	19.38	0.41	97.87	61	29.62	0	0.00	0	0.00	0	0.00
050600011901	Headwaters Big Darby Creek	30.24	4.07	86.53	216	44.70	0	0.00	0	0.00	0	0.00
050600011902	Spain Creek-Big Darby Creek	32.38	1.61	95.03	494	39.82	1	70.00	1	56.00	1	71.45
050600011903	Buck Run	27.34	0.64	97.67	211	44.71	0	0.00	0	0.00	0	0.00
050600011904	Sugar Run	33.77	0.25	99.26	66	52.01	0	0.00	0	0.00	0	0.00
050600011905	Robinson Run-Big Darby Creek	40.91	0.59	98.56	199	42.15	0	0.00	0	0.00	0	0.00
050600012001	Headwaters Treacle Creek	36.68	1.83	95.02	195	35.18	0	0.00	0	0.00	0	0.00
050600012002	Proctor Run-Treacle Creek	45.27	2.59	94.29	168	34.95	0	0.00	0	0.00	0	0.00
050600012003	Headwaters Little Darby Creek	34.52	2.82	91.84	262	29.89	0	0.00	0	0.00	0	0.00
050600012004	Spring Fork	37.80	0.71	98.11	165	41.58	1	59.00	1	47.00	0	0.00
050600012005	Barron Creek-Little Darby Creek	48.72	0.47	99.03	128	39.57	0	0.00	0	0.00	0	0.00
050600012006	Thomas Ditch-Little Darby Creek	34.73	0.81	97.67	98	46.31	3	72.33	3	74.67	3	75.47

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050600012101	Worthington Ditch-Big Darby Creek	48.25	0.49	98.98	181	40.99	0	0.00	0	0.00	0	0.00
050600012102	Silver Ditch-Big Darby Creek	31.84	1.12	96.48	32	51.93	0	0.00	0	0.00	0	0.00
050600012201	Hellbranch Run	41.35	1.16	97.21	180	26.61	5	20.30	5	8.80	2	14.19
050600012202	Gay Run-Big Darby Creek	21.52	0.74	96.57	59	43.31	1	37.50	1	19.00	0	0.00
050600012203	Greenbrier Creek-Big Darby Creek	20.44	0.36	98.23	60	39.36	0	0.00	0	0.00	0	0.00
050600012204	Lizard Run-Big Darby Creek	14.50	2.25	84.46	59	60.01	0	0.00	0	0.00	0	0.00
050600012301	Scioto Big Run	17.70	0.11	99.40	21	8.54	11	31.86	1	10.00	1	28.74
050600012302	Kian Run-Scioto River	5.26	0.18	96.65	20	13.85	1	29.00	1	23.00	1	7.25
050600012303	Grant Run-Scioto River	21.74	0.17	99.20	52	18.93	4	31.88	0	0.00	0	0.00
050600012304	Grove Run-Scioto River	24.70	0.83	96.66	178	35.51	12	39.79	2	37.00	2	38.76
050600012305	Dry Run	19.60	0.68	96.55	74	35.98	6	31.58	3	21.00	3	25.18
050600012306	Town of Circleville-Scioto River	10.38	1.14	88.97	67	46.03	5	44.00	2	22.00	2	34.71
050600020101	Headwaters Deer Creek	30.14	1.47	95.13	98	38.54	2	40.75	2	27.00	0	0.00
050600020102	Richmond Ditch-Deer Creek	36.23	0.24	99.35	62	33.11	0	0.00	0	0.00	0	0.00
050600020103	Glade Run	44.57	0.53	98.82	61	36.52	0	0.00	0	0.00	0	0.00
050600020104	Walnut Run	41.56	0.31	99.25	31	28.28	0	0.00	0	0.00	0	0.00
050600020105	Oak Run	35.75	0.41	98.86	48	27.58	0	0.00	0	0.00	0	0.00
050600020106	Turkey Run-Deer Creek	26.43	0.43	98.38	86	37.89	0	0.00	0	0.00	0	0.00
050600020201	South Fork Bradford Creek-Bradford Creek	44.27	0.20	99.54	47	37.23	0	0.00	0	0.00	0	0.00
050600020202	Sugar Run	43.66	0.34	99.22	52	46.87	0	0.00	0	0.00	0	0.00
050600020203	Opossum Run	40.29	0.35	99.14	43	45.24	0	0.00	0	0.00	0	0.00
050600020204	Town of Mount Sterling-Deer Creek	31.34	1.09	96.52	71	48.58	0	0.00	0	0.00	0	0.00
050600020205	Deer Creek Lake-Deer Creek	34.61	0.75	97.83	51	43.26	0	0.00	0	0.00	0	0.00
050600020206	Buskirk Creek	44.91	0.23	99.48	40	35.51	0	0.00	0	0.00	0	0.00
050600020207	Dear Creek Dam-Deer Creek	27.66	0.24	99.12	21	49.76	0	0.00	0	0.00	0	0.00
050600020301	Dry Run	40.12	0.21	99.47	38	38.85	0	0.00	0	0.00	0	0.00
050600020302	Hay Run	34.09	0.15	99.56	58	30.71	0	0.00	0	0.00	0	0.00
050600020303	Waugh Creek	25.86	0.13	99.48	27	29.13	0	0.00	0	0.00	0	0.00
050600020304	State Run-Deer Creek	14.75	0.31	97.89	56	35.81	0	0.00	0	0.00	0	0.00
050600020401	Hargus Creek	10.43	0.23	97.82	42	24.77	0	0.00	0	0.00	0	0.00
050600020402	Yellowbud Creek	35.30	0.44	98.75	82	35.24	0	0.00	0	0.00	0	0.00
050600020403	Lick Run-Scioto River	18.31	0.80	95.64	78	37.65	2	68.00	2	62.50	1	63.31
050600020404	Congo Creek	24.26	0.82	96.64	46	42.70	0	0.00	0	0.00	0	0.00
050600020405	Scippo Creek	13.31	0.16	98.83	46	39.45	0	0.00	0	0.00	0	0.00
050600020406	Blackwater Creek-Scioto River	13.73	2.90	78.86	103	46.60	0	0.00	0	0.00	0	0.00
050600020501	Kinnikinnick Creek	15.82	1.68	89.36	146	45.06	1	66.00	1	67.00	1	80.93
050600020502	Dry Run-Scioto River	7.34	2.95	59.85	76	38.71	0	0.00	0	0.00	0	0.00
050600020503	Lick Run-Scioto River	1.70	3.45	0.00	112	31.24	0	0.00	0	0.00	0	0.00
050600020601	Beech Fork	22.45	1.83	91.84	70	45.09	0	0.00	0	0.00	0	0.00

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050600020602	Headwaters Salt Creek	12.97	0.16	98.73	26	28.98	0	0.00	0	0.00	0	0.00
050600020603	Laurel Run	1.67	0.20	88.28	45	52.19	0	0.00	0	0.00	0	0.00
050600020604	Pine Creek	0.44	0.92	0.00	88	75.12	0	0.00	0	0.00	0	0.00
050600020605	Blue Creek-Salt Creek	1.67	0.48	71.43	75	45.50	0	0.00	0	0.00	0	0.00
050600020701	Pigeon Creek	0.46	1.14	0.00	153	62.75	0	0.00	0	0.00	0	0.00
050600020702	Middle Fork Salt Creek	0.48	0.89	0.00	170	64.38	0	0.00	0	0.00	0	0.00
050600020801	Headwaters Little Salt Creek	7.31	2.39	67.27	115	62.46	0	0.00	0	0.00	0	0.00
050600020802	Buckeye Creek	2.26	2.18	3.24	101	63.40	0	0.00	0	0.00	0	0.00
050600020803	Horse Creek-Little Salt Creek	1.51	1.91	0.00	78	43.89	0	0.00	0	0.00	0	0.00
050600020804	Pigeon Creek	0.37	1.24	0.00	101	62.85	0	0.00	0	0.00	0	0.00
050600020805	Sour Run-Little Salt Creek	0.49	1.12	0.00	136	59.09	0	0.00	0	0.00	0	0.00
050600020901	East Fork Queer Creek	0.23	0.12	44.82	12	79.68	0	0.00	0	0.00	0	0.00
050600020902	Queer Creek	0.39	0.63	0.00	60	67.12	0	0.00	0	0.00	0	0.00
050600020903	Pretty Run	0.36	0.36	1.96	24	61.61	0	0.00	0	0.00	0	0.00
050600020904	Pike Run	0.26	0.50	0.00	39	60.44	0	0.00	0	0.00	0	0.00
050600020905	Village of Eagle Mills-Salt Creek	0.16	1.22	0.00	52	64.80	0	0.00	0	0.00	0	0.00
050600020906	Poe Run-Salt Creek	0.67	1.08	0.00	140	55.15	0	0.00	0	0.00	0	0.00
050600021001	Indian Creek	0.16	0.19	0.00	37	51.23	0	0.00	0	0.00	0	0.00
050600021002	Dry Run	0.42	1.33	0.00	52	40.79	0	0.00	0	0.00	0	0.00
050600021003	Headwaters Walnut Creek	0.69	1.16	0.00	93	54.27	0	0.00	0	0.00	0	0.00
050600021004	Lick Run-Walnut Creek	1.27	1.77	0.00	129	53.59	0	0.00	0	0.00	0	0.00
050600021005	Stony Creek-Scioto River	0.67	2.92	0.00	103	47.35	0	0.00	0	0.00	0	0.00
050600021101	Carrs Run	0.08	0.67	0.00	31	72.36	0	0.00	0	0.00	0	0.00
050600021102	Left Fork Crooked Creek	0.03	0.11	0.00	16	54.39	0	0.00	0	0.00	0	0.00
050600021103	Crooked Creek	0.60	0.88	0.00	81	48.64	0	0.00	0	0.00	0	0.00
050600021104	Pee Pee Creek	0.03	0.16	0.00	43	50.96	0	0.00	0	0.00	0	0.00
050600021105	Meadow Run-Scioto River	2.15	2.37	0.00	245	46.57	0	0.00	0	0.00	0	0.00
050600021201	Headwaters Sunfish Creek	0.22	0.08	63.24	18	69.32	0	0.00	0	0.00	0	0.00
050600021202	Headwaters Morgan Fork	0.01	0.23	0.00	10	65.51	0	0.00	0	0.00	0	0.00
050600021203	Left Fork Morgan Fork-Morgan Fork	0.19	0.02	88.75	5	34.10	0	0.00	0	0.00	0	0.00
050600021204	Grassy Fork-Sunfish Creek	0.46	0.05	89.39	12	47.03	0	0.00	0	0.00	0	0.00
050600021205	Chenoweth Fork	0.01	0.07	0.00	14	50.06	0	0.00	0	0.00	0	0.00
050600021206	Leeth Creek-Sunfish Creek	0.36	0.15	59.48	30	60.07	0	0.00	0	0.00	0	0.00
050600021301	No Name Creek	0.02	0.04	0.00	16	49.77	0	0.00	0	0.00	0	0.00
050600021302	Headwaters Big Beaver Creek	0.84	1.86	0.00	163	51.45	0	0.00	0	0.00	0	0.00
050600021303	Little Beaver Creek-Big Beaver Creek	1.90	2.16	0.00	194	52.73	0	0.00	0	0.00	0	0.00
050600021304	Boswell Run-Scioto River	0.01	1.64	0.00	78	40.54	0	0.00	0	0.00	0	0.00
050600021401	Churn Creek	0.33	0.03	90.25	7	44.28	0	0.00	0	0.00	0	0.00
050600021402	Mill Creek	0.58	0.09	84.79	27	77.15	0	0.00	0	0.00	0	0.00

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050600021403	Turkey Creek	0.58	0.20	65.57	53	61.19	0	0.00	0	0.00	0	0.00
050600021404	Turkey Run-South Fork Scioto Brush Creek	0.76	0.13	82.66	48	40.82	0	0.00	0	0.00	0	0.00
050600021405	Rocky Fork	0.00	0.00	0.00	4	60.53	0	0.00	0	0.00	0	0.00
050600021406	Beech Fork-South Fork Scioto Brush Creek	0.03	0.44	0.00	51	51.31	0	0.00	0	0.00	0	0.00
050600021501	Headwaters Scioto Brush Creek	1.62	0.28	82.61	134	58.04	0	0.00	0	0.00	0	0.00
050600021502	Rarden Creek	0.00	0.21	0.00	19	46.19	0	0.00	0	0.00	0	0.00
050600021503	Jaybird Branch-Scioto Brush Creek	1.44	0.37	74.19	55	60.90	0	0.00	0	0.00	0	0.00
050600021504	Dunlap Creek-Scioto Brush Creek	0.35	0.24	32.87	99	45.07	0	0.00	0	0.00	0	0.00
050600021505	Bear Creek	0.00	0.01	0.00	1	74.00	0	0.00	0	0.00	0	0.00
050600021506	McCullough Creek	0.02	0.05	0.00	12	57.15	0	0.00	0	0.00	0	0.00
050600021507	Duck Run-Scioto Brush Creek	0.06	0.28	0.00	48	56.58	0	0.00	0	0.00	0	0.00
050600021601	Camp Creek	0.02	0.08	0.00	28	67.30	0	0.00	0	0.00	0	0.00
050600021602	Big Run-Scioto River	0.15	0.52	0.00	67	39.94	0	0.00	0	0.00	0	0.00
050600021603	Bear Creek-Scioto River	0.70	1.05	0.00	137	32.01	0	0.00	0	0.00	0	0.00
050600021604	Pond Creek	0.03	0.44	0.00	82	18.04	0	0.00	0	0.00	0	0.00
050600021605	Carroll Run-Scioto River	0.35	8.09	0.00	258	22.54	0	0.00	0	0.00	0	0.00
050600030101	Headwaters Paint Creek	45.58	0.34	99.25	43	49.80	0	0.00	0	0.00	0	0.00
050600030102	East Fork Paint Creek	55.80	0.23	99.59	87	36.88	0	0.00	0	0.00	0	0.00
050600030103	Town of Washington Court House-Paint Creek	44.87	0.75	98.32	83	33.37	0	0.00	0	0.00	0	0.00
050600030201	Headwaters Sugar Creek	49.67	0.40	99.19	75	32.39	0	0.00	0	0.00	0	0.00
050600030202	Camp Run-Sugar Creek	51.06	0.58	98.86	58	50.43	0	0.00	0	0.00	0	0.00
050600030301	Wilson Creek	43.26	0.39	99.11	27	38.34	0	0.00	0	0.00	0	0.00
050600030302	Grassy Branch	63.94	0.34	99.46	18	41.72	0	0.00	0	0.00	0	0.00
050600030303	West Branch Rattlesnake Creek	55.78	0.20	99.64	24	41.94	0	0.00	0	0.00	0	0.00
050600030304	Headwaters Rattlesnake Creek	55.32	0.69	98.75	91	49.41	0	0.00	0	0.00	0	0.00
050600030305	Waddle Ditch-Rattlesnake Creek	37.27	0.89	97.61	33	56.77	0	0.00	0	0.00	0	0.00
050600030401	South Fork Lees Creek	27.26	0.17	99.37	11	36.28	0	0.00	0	0.00	0	0.00
050600030402	Middle Fork Lees Creek	28.83	0.12	99.59	12	42.46	0	0.00	0	0.00	0	0.00
050600030403	Lees Creek	35.56	0.49	98.62	74	50.49	0	0.00	0	0.00	0	0.00
050600030404	Walnut Creek	11.92	0.03	99.77	12	36.25	0	0.00	0	0.00	0	0.00
050600030405	Hardin Creek	6.35	0.36	94.28	10	58.33	0	0.00	0	0.00	0	0.00
050600030406	Fall Creek	14.89	0.30	97.97	7	60.26	0	0.00	0	0.00	0	0.00
050600030407	Big Branch-Rattlesnake Creek	7.18	0.62	91.42	22	58.42	0	0.00	0	0.00	0	0.00
050600030501	South Fork Rocky Fork	2.16	0.01	99.65	3	43.21	0	0.00	0	0.00	0	0.00
050600030502	Clear Creek	4.33	0.42	90.34	54	53.76	0	0.00	0	0.00	0	0.00
050600030503	Headwaters Rocky Fork	4.81	0.64	86.68	44	60.97	0	0.00	0	0.00	0	0.00
050600030504	Rocky Fork Lake-Rocky Fork	3.19	0.15	95.36	10	50.62	0	0.00	0	0.00	0	0.00
050600030505	Franklin Branch-Rocky Fork	4.98	0.15	97.02	21	50.68	0	0.00	0	0.00	0	0.00
050600030601	Indian Creek-Paint Creek	34.62	0.27	99.23	72	43.06	0	0.00	0	0.00	0	0.00

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050600030602	Farmers Run-Paint Creek	14.31	0.46	96.78	41	42.94	0	0.00	0	0.00	0	0.00
050600030603	Cliff Creek-Paint Creek	3.63	0.71	80.43	20	66.53	0	0.00	0	0.00	0	0.00
050600030701	Buckskin Creek	17.01	0.13	99.25	67	44.44	0	0.00	0	0.00	0	0.00
050600030702	Upper Twin Creek	0.28	0.16	42.38	22	71.97	0	0.00	0	0.00	0	0.00
050600030703	Lower Twin Creek	0.81	0.38	53.40	23	76.25	0	0.00	0	0.00	0	0.00
050600030704	Sulphur Lick-Paint Creek	0.54	0.44	17.50	121	55.29	0	0.00	0	0.00	0	0.00
050600030801	Thompson Creek	43.49	0.29	99.33	18	31.92	0	0.00	0	0.00	0	0.00
050600030802	Headwaters North Fork Paint Creek	42.84	0.11	99.75	22	30.29	0	0.00	0	0.00	0	0.00
050600030803	Headwaters Compton Creek	41.71	0.57	98.63	66	38.21	0	0.00	0	0.00	0	0.00
050600030804	Mills Branch-Compton Creek	41.75	0.68	98.37	43	53.03	0	0.00	0	0.00	0	0.00
050600030805	Mud Run-North Fork Paint Creek	38.68	0.53	98.64	70	37.23	0	0.00	0	0.00	0	0.00
050600030901	Herrod Creek	27.67	0.14	99.51	25	35.45	0	0.00	0	0.00	0	0.00
050600030902	Little Creek	9.44	0.14	98.48	46	41.37	0	0.00	0	0.00	0	0.00
050600030903	Oldtown Run-North Fork Paint Creek	18.91	0.39	97.92	95	36.94	0	0.00	0	0.00	0	0.00
050600030904	Biers Run-North Fork Paint Creek	7.67	0.18	97.61	30	30.04	0	0.00	0	0.00	0	0.00
050600031001	Black Run	0.23	2.09	0.00	10	57.72	0	0.00	0	0.00	0	0.00
050600031002	Ralston Run	0.02	0.08	0.00	14	41.55	0	0.00	0	0.00	0	0.00
050600031003	City of Chillicothe-Paint Creek	1.89	1.59	16.06	114	39.85	0	0.00	0	0.00	0	0.00
050800010101	North Fork Great Miami River	36.70	2.53	93.12	170	49.78	0	0.00	0	0.00	0	0.00
050800010102	South Fork Great Miami River	28.51	1.22	95.72	226	47.33	1	19.00	1	7.00	0	0.00
050800010103	Indian Lake-Great Miami River	32.02	7.17	77.59	227	44.48	0	0.00	0	0.00	0	0.00
050800010201	Willow Creek	42.51	0.78	98.17	89	44.31	0	0.00	0	0.00	0	0.00
050800010202	Headwaters Muchnippi Creek	41.28	0.32	99.23	74	36.20	0	0.00	0	0.00	0	0.00
050800010203	Little Muchnippi Creek	36.31	1.26	96.54	229	47.86	0	0.00	0	0.00	0	0.00
050800010204	Calico Creek-Muchnippi Creek	46.04	4.31	90.64	94	58.92	0	0.00	0	0.00	0	0.00
050800010301	Cherokee Mans Run	23.07	1.19	94.83	90	35.17	0	0.00	0	0.00	0	0.00
050800010302	Rennick Creek-Great Miami River	44.50	4.58	89.70	260	42.24	0	0.00	0	0.00	0	0.00
050800010303	Rum Creek	34.77	1.23	96.45	155	48.57	0	0.00	0	0.00	0	0.00
050800010304	Blue Jacket Creek	23.79	4.89	79.44	126	32.45	0	0.00	0	0.00	0	0.00
050800010305	Bokengehalas Creek	23.09	3.71	83.94	244	44.22	0	0.00	0	0.00	0	0.00
050800010306	Brandywine Creek-Great Miami River	32.26	2.64	91.81	223	49.70	0	0.00	0	0.00	0	0.00
050800010401	McKees Creek	19.47	3.94	79.75	181	32.24	0	0.00	0	0.00	0	0.00
050800010402	Lee Creek	29.71	2.13	92.82	165	46.09	1	54.00	1	38.00	0	0.00
050800010403	Stoney Creek	26.16	2.99	88.57	168	45.11	0	0.00	0	0.00	0	0.00
050800010404	Indian Creek	35.47	1.51	95.74	72	53.40	0	0.00	0	0.00	0	0.00
050800010405	Plum Creek	20.25	0.50	97.52	183	32.47	0	0.00	0	0.00	0	0.00
050800010406	Turkeyfoot Creek-Great Miami River	19.37	0.86	95.57	208	44.54	0	0.00	0	0.00	0	0.00
050800010501	Headwaters Loramie Creek	28.68	0.62	97.85	231	37.40	0	0.00	0	0.00	0	0.00
050800010502	Mile Creek	41.55	0.18	99.58	141	37.07	0	0.00	0	0.00	0	0.00

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050800010503	Lake Loramie-Loramie Creek	32.99	2.18	93.38	426	48.09	0	0.00	0	0.00	0	0.00
050800010601	Nine Mile Creek	23.88	0.88	96.33	133	37.49	0	0.00	0	0.00	0	0.00
050800010602	Painter Creek-Loramie Creek	14.11	1.00	92.89	197	35.29	0	0.00	0	0.00	0	0.00
050800010603	Turtle Creek	14.81	0.46	96.90	201	35.10	0	0.00	0	0.00	0	0.00
050800010604	Mill Creek-Loramie Creek	11.14	1.19	89.34	205	49.94	0	0.00	0	0.00	0	0.00
050800010701	Leatherwood Creek	24.18	0.27	98.90	42	36.43	0	0.00	0	0.00	0	0.00
050800010702	Mosquito Creek	22.34	1.29	94.20	195	51.69	1	70.00	1	86.00	1	75.81
050800010703	Brush Creek-Great Miami River	14.56	0.68	95.36	120	34.66	0	0.00	0	0.00	0	0.00
050800010704	Rush Creek	19.38	0.48	97.51	55	31.39	0	0.00	0	0.00	0	0.00
050800010705	Garbry Creek-Great Miami River	15.60	0.44	97.16	96	28.86	0	0.00	0	0.00	0	0.00
050800010801	Spring Creek	18.50	0.40	97.82	93	38.52	1	68.50	1	63.00	1	58.52
050800010802	Headwaters Lost Creek	15.86	0.26	98.36	49	37.53	0	0.00	0	0.00	0	0.00
050800010803	East Branch Lost Creek	18.45	0.38	97.96	47	34.23	0	0.00	0	0.00	0	0.00
050800010804	Little Lost Creek-Lost Creek	13.44	0.24	98.23	49	35.88	0	0.00	0	0.00	0	0.00
050800010805	Peter's Creek-Great Miami River	21.77	0.46	97.91	82	27.21	0	0.00	0	0.00	0	0.00
050800010901	South Fork Stillwater River	30.86	1.06	96.56	59	44.92	0	0.00	0	0.00	0	0.00
050800010902	Headwaters Stillwater River	38.02	0.17	99.54	16	41.50	0	0.00	0	0.00	0	0.00
050800010903	North Fork Stillwater River	30.09	0.36	98.82	58	33.69	0	0.00	0	0.00	0	0.00
050800010904	Boyd Creek	23.56	0.93	96.05	90	24.29	0	0.00	0	0.00	0	0.00
050800010905	Woodington Run-Stillwater River	32.47	1.40	95.68	216	29.99	1	70.00	1	46.00	1	60.24
050800010906	Town of Beamsville-Stillwater River	19.76	0.78	96.07	152	36.87	0	0.00	0	0.00	0	0.00
050800011001	Dismal Creek	22.85	2.23	90.24	44	34.73	0	0.00	0	0.00	0	0.00
050800011002	Kraut Creek	22.28	3.03	86.42	229	46.77	0	0.00	0	0.00	0	0.00
050800011003	West Branch Greenville Creek	24.28	1.01	95.86	165	37.75	0	0.00	0	0.00	0	0.00
050800011004	Headwaters Greenville Creek	16.05	2.52	84.33	125	46.73	1	65.00	1	77.00	1	88.91
050800011101	Mud Creek	27.84	2.63	90.54	277	27.45	0	0.00	0	0.00	0	0.00
050800011102	Bridge Creek-Greenville Creek	19.17	2.01	89.52	239	23.88	0	0.00	0	0.00	0	0.00
050800011103	Dividing Branch-Greenville Creek	21.95	0.88	96.01	352	32.61	0	0.00	0	0.00	0	0.00
050800011201	Indian Creek	27.78	0.30	98.93	66	35.05	0	0.00	0	0.00	0	0.00
050800011202	Swamp Creek	27.16	0.16	99.40	95	36.22	0	0.00	0	0.00	0	0.00
050800011203	Trotters Creek	19.49	0.40	97.96	56	42.23	0	0.00	0	0.00	0	0.00
050800011204	Harris Creek	18.11	0.31	98.27	62	26.05	0	0.00	0	0.00	0	0.00
050800011205	Town of Covington-Stillwater River	11.54	0.41	96.49	73	37.94	0	0.00	0	0.00	0	0.00
050800011301	Little Painter Creek	41.74	0.15	99.63	25	28.64	0	0.00	0	0.00	0	0.00
050800011302	Painter Creek	38.44	0.61	98.41	124	29.49	0	0.00	0	0.00	0	0.00
050800011303	Canyon Run-Stillwater River	25.27	0.27	98.93	79	41.94	0	0.00	0	0.00	0	0.00
050800011401	Brush Creek	39.61	0.55	98.62	39	50.88	0	0.00	0	0.00	0	0.00
050800011402	Ludlow Creek	31.78	0.39	98.78	78	36.15	0	0.00	0	0.00	0	0.00
050800011403	Brush Creek	19.57	0.24	98.79	12	34.17	0	0.00	0	0.00	0	0.00

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050800011404	Jones Run-Stillwater River	14.97	0.76	94.91	39	31.59	0	0.00	0	0.00	0	0.00
050800011405	Mill Creek-Stillwater River	16.84	0.85	94.94	45	41.09	0	0.00	0	0.00	0	0.00
050800011406	Town of Irvington-Stillwater River	7.55	0.24	96.80	32	20.64	0	0.00	0	0.00	0	0.00
050800011501	Machochee Creek	11.57	2.10	81.84	98	47.92	0	0.00	0	0.00	0	0.00
050800011502	Headwaters Mad River	7.48	2.73	63.55	146	53.60	0	0.00	0	0.00	0	0.00
050800011503	Kings Creek	14.70	0.97	93.39	173	37.94	0	0.00	0	0.00	0	0.00
050800011504	Glady Creek-Mad River	32.67	2.65	91.87	229	35.29	1	71.00	1	83.00	1	97.53
050800011601	Muddy Creek	30.83	1.99	93.55	173	42.64	0	0.00	0	0.00	0	0.00
050800011602	Dugan Run	18.41	0.81	95.61	94	27.84	0	0.00	0	0.00	0	0.00
050800011603	Nettle Creek	11.71	0.49	95.85	69	42.78	0	0.00	0	0.00	0	0.00
050800011604	Anderson Creek	26.50	0.50	98.11	55	34.74	0	0.00	0	0.00	0	0.00
050800011605	Storms Creek	11.57	0.14	98.82	13	38.65	0	0.00	0	0.00	0	0.00
050800011606	Chapman Creek	18.98	0.92	95.14	90	40.01	0	0.00	0	0.00	0	0.00
050800011607	Bogles Run-Mad River	34.20	2.24	93.44	90	68.61	0	0.00	0	0.00	0	0.00
050800011701	East Fork Buck Creek	25.64	1.25	95.13	107	37.52	0	0.00	0	0.00	0	0.00
050800011702	Headwaters Buck Creek	18.49	1.38	92.53	153	35.68	0	0.00	0	0.00	0	0.00
050800011703	Sinking Creek	24.97	0.71	97.16	41	42.55	1	81.00	1	97.00	1	100.00
050800011704	Beaver Creek	31.11	1.00	96.78	99	36.88	0	0.00	0	0.00	0	0.00
050800011705	Clarence J Brown Lake-Buck Creek	10.38	1.53	85.24	72	39.13	1	76.00	1	86.00	1	100.00
050800011706	City of Springfield-Buck Creek	12.88	0.44	96.60	33	27.07	0	0.00	0	0.00	0	0.00
050800011801	Moore Run	18.99	0.59	96.92	62	28.62	0	0.00	0	0.00	0	0.00
050800011802	Pondy Creek-Mad River	23.77	0.72	96.98	26	29.57	0	0.00	0	0.00	0	0.00
050800011803	Mill Creek	23.80	0.88	96.31	41	26.65	0	0.00	0	0.00	0	0.00
050800011804	Donnels Creek	26.54	0.32	98.78	52	32.59	0	0.00	0	0.00	0	0.00
050800011805	Rock Run-Mad River	18.51	0.75	95.97	40	28.46	0	0.00	0	0.00	0	0.00
050800011806	Jackson Creek-Mad River	28.18	1.33	95.30	97	30.02	0	0.00	0	0.00	0	0.00
050800011901	Mud Creek	21.57	0.42	98.05	35	23.56	0	0.00	0	0.00	0	0.00
050800011902	Mud Run	21.78	0.27	98.76	31	29.35	0	0.00	0	0.00	0	0.00
050800011903	Huffman Dam-Mad River	17.79	0.28	98.44	43	19.29	0	0.00	0	0.00	0	0.00
050800011904	City of Dayton-Mad River	6.22	0.09	98.53	17	12.72	0	0.00	0	0.00	0	0.00
050800012001	East Fork Honey Creek	29.72	1.43	95.20	54	42.65	0	0.00	0	0.00	0	0.00
050800012002	West Fork Honey Creek	26.08	1.15	95.60	116	41.75	0	0.00	0	0.00	0	0.00
050800012003	Indian Creek	16.75	1.16	93.09	88	43.04	1	82.00	1	93.00	1	100.00
050800012004	Pleasant Run-Honey Creek	17.46	0.91	94.79	91	39.40	1	29.00	1	29.00	1	37.51
050800012005	Poplar Creek-Great Miami River	11.12	0.37	96.66	73	37.21	0	0.00	0	0.00	0	0.00
050800020101	North Branch Wolf Creek	24.16	0.50	97.92	53	27.37	0	0.00	0	0.00	0	0.00
050800020102	Headwaters Wolf Creek	28.14	0.28	99.00	43	32.25	0	0.00	0	0.00	0	0.00
050800020103	Dry Run-Wolf Creek	11.62	0.56	95.14	47	15.14	0	0.00	0	0.00	0	0.00
050800020104	Holes Creek	16.45	0.18	98.93	26	18.00	0	0.00	0	0.00	0	0.00

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050800020105	Town of Oakwood-Great Miami River	2.05	0.23	88.56	20	9.38	0	0.00	0	0.00	0	0.00
050800020106	Opossum Creek-Great Miami River	5.28	0.18	96.65	14	21.72	0	0.00	0	0.00	0	0.00
050800020201	Millers Fork	22.76	0.33	98.54	70	30.43	0	0.00	0	0.00	0	0.00
050800020202	Headwaters Twin Creek	30.85	0.58	98.13	216	38.23	0	0.00	0	0.00	0	0.00
050800020203	Swamp Creek	43.96	0.18	99.58	23	39.98	0	0.00	0	0.00	0	0.00
050800020204	Price Creek	28.16	0.25	99.10	71	37.57	0	0.00	0	0.00	0	0.00
050800020205	Lesley Run-Twin Creek	24.22	0.26	98.91	96	39.46	0	0.00	0	0.00	0	0.00
050800020301	Bantas Fork	23.17	0.25	98.94	81	35.96	0	0.00	0	0.00	0	0.00
050800020302	Aukerman Creek	17.88	0.21	98.84	36	28.13	0	0.00	0	0.00	0	0.00
050800020303	Toms Run	30.36	0.36	98.83	47	43.96	0	0.00	0	0.00	0	0.00
050800020304	Town of Gratis-Twin Creek	12.62	0.36	97.18	65	40.33	0	0.00	0	0.00	0	0.00
050800020305	Little Twin Creek	23.41	0.22	99.04	29	27.82	0	0.00	0	0.00	0	0.00
050800020306	Town of Germantown-Twin Creek	7.90	0.18	97.74	26	41.61	0	0.00	0	0.00	0	0.00
050800020401	Headwaters Bear Creek	29.97	0.37	98.77	53	33.50	0	0.00	0	0.00	0	0.00
050800020402	Mouth Bear Creek	17.82	0.38	97.87	41	39.94	0	0.00	0	0.00	0	0.00
050800020403	Clear Creek	10.57	0.32	97.01	99	28.45	0	0.00	0	0.00	0	0.00
050800020404	Dry Run-Great Miami River	5.88	0.34	94.20	41	33.73	0	0.00	0	0.00	0	0.00
050800020501	Headwaters Sevenmile Creek	30.04	0.39	98.70	152	33.93	0	0.00	0	0.00	0	0.00
050800020502	Paint Creek	13.99	0.18	98.68	30	40.16	0	0.00	0	0.00	0	0.00
050800020503	Beasley Run-Sevenmile Creek	13.52	0.20	98.49	59	29.54	0	0.00	0	0.00	0	0.00
050800020504	Rush Run-Sevenmile Creek	3.26	0.17	94.87	42	48.31	0	0.00	0	0.00	0	0.00
050800020505	Ninemile Creek-Sevenmile Creek	0.28	0.12	58.99	15	21.75	0	0.00	0	0.00	0	0.00
050800020601	Headwaters Four Mile Creek	21.43	0.15	99.32	39	49.90	0	0.00	0	0.00	0	0.00
050800020602	Little Four Mile Creek	31.57	0.13	99.58	13	51.41	0	0.00	0	0.00	0	0.00
050800020603	East Fork Four Mile Creek-Four Mile Creek	20.67	0.12	99.43	16	48.29	0	0.00	0	0.00	0	0.00
050800020604	Acton Lake Dam-Four Mile Creek	4.64	0.06	98.62	31	43.25	0	0.00	0	0.00	0	0.00
050800020605	Cotton Run-Four Mile Creek	0.92	0.13	85.74	40	35.73	0	0.00	0	0.00	0	0.00
050800020701	Elk Creek	8.74	0.14	98.40	71	27.07	0	0.00	0	0.00	0	0.00
050800020702	Browns Run-Great Miami River	2.15	0.13	94.17	30	21.60	0	0.00	0	0.00	0	0.00
050800020703	Shaker Creek	21.83	0.41	98.12	42	19.13	0	0.00	0	0.00	0	0.00
050800020704	Dicks Creek	9.41	0.18	98.06	28	11.11	0	0.00	0	0.00	0	0.00
050800020705	Gregory Creek	5.15	0.07	98.57	11	11.16	0	0.00	0	0.00	0	0.00
050800020706	Town of New Miami-Great Miami River	0.64	0.57	10.24	40	30.18	0	0.00	0	0.00	0	0.00
050800020802	Brandywine Creek-Indian Creek	26.38	0.00	100.00	0	0.00	0	0.00	0	0.00	0	0.00
050800020803	Beals Run-Indian Creek	1.44	0.38	73.46	56	42.04	0	0.00	0	0.00	0	0.00
050800020901	Pleasant Run	2.13	0.07	96.59	6	7.31	0	0.00	0	0.00	0	0.00
050800020902	Banklick Creek-Great Miami River	0.54	0.24	55.43	32	19.27	0	0.00	0	0.00	0	0.00
050800020903	Paddys Run	5.16	0.83	83.99	61	16.89	0	0.00	0	0.00	0	0.00
050800020904	Dry Run-Great Miami River	1.31	0.19	85.25	19	24.98	0	0.00	0	0.00	0	0.00

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050800020905	Taylor Creek	1.48	0.00	99.86	2	19.94	0	0.00	0	0.00	0	0.00
050800020906	Jordan Creek-Great Miami River	1.58	0.79	50.15	33	42.46	0	0.00	0	0.00	0	0.00
050800020907	Doublelick Run-Great Miami River	2.45	2.29	6.61	22	49.21	0	0.00	0	0.00	0	0.00
050800030701	Headwaters Middle Fork East Fork Whitewater River	19.65	1.52	92.28	72	57.63	0	0.00	0	0.00	0	0.00
050800030702	Headwaters East Fork Whitewater River	14.69	0.84	94.26	105	32.19	0	0.00	0	0.00	0	0.00
050800030703	Mud Creek-Middle Fork East Fork Whitewater River	21.06	0.27	98.70	16	28.91	0	0.00	0	0.00	0	0.00
050800030704	Rocky Fork-East Fork Whitewater River	9.33	0.03	99.66	2	26.99	0	0.00	0	0.00	0	0.00
050800030707	Short Creek-East Fork Whitewater River	0.81	0.00	100.00	0	0.00	0	0.00	0	0.00	0	0.00
050800030708	Elkhorn Creek	25.34	0.21	99.19	11	32.75	0	0.00	0	0.00	0	0.00
050800030807	Headwaters Dry Fork Whitewater River	1.19	0.00	100.00	0	0.00	0	0.00	0	0.00	0	0.00
050800030808	Howard Creek-Dry Fork Whitewater River	2.20	0.28	87.05	20	19.69	0	0.00	0	0.00	0	0.00
050800030809	Lee Creek-Dry Fork Whitewater River	2.96	0.24	91.94	10	21.22	0	0.00	0	0.00	0	0.00
050800030810	Jameson Creek-Whitewater River	1.52	1.88	0.00	40	51.66	0	0.00	0	0.00	0	0.00
050901010101	Chickamauga Creek	0.19	0.12	38.83	32	33.02	0	0.00	0	0.00	0	0.00
050901010103	Long Run-Ohio River	1.80	0.03	98.43	2	26.99	0	0.00	0	0.00	0	0.00
050901010201	East Branch Raccoon Creek	0.54	0.62	0.00	95	58.42	0	0.00	0	0.00	0	0.00
050901010202	West Branch Raccoon Creek	1.19	1.36	0.00	106	63.39	0	0.00	0	0.00	0	0.00
050901010203	Brushy Fork	0.56	1.12	0.00	153	61.26	0	0.00	0	0.00	0	0.00
050901010204	Twomile Run-Raccoon Creek	1.18	6.37	0.00	131	70.98	0	0.00	0	0.00	0	0.00
050901010205	Town of Zaleski-Raccoon Creek	2.45	4.94	0.00	207	70.44	4	64.50	4	55.75	4	62.89
050901010301	Hewett Fork	0.47	2.55	0.00	152	72.98	4	51.25	3	48.33	2	57.77
050901010302	Headwaters Elk Fork	1.48	2.14	0.00	293	64.47	0	0.00	0	0.00	0	0.00
050901010303	Flat Run-Elk Fork	0.43	4.65	0.00	57	85.36	0	0.00	0	0.00	0	0.00
050901010304	Flat Run-Raccoon Creek	0.85	2.97	0.00	303	66.98	0	0.00	0	0.00	0	0.00
050901010401	Headwaters Little Raccoon Creek	2.07	1.86	10.08	301	50.44	0	0.00	0	0.00	0	0.00
050901010402	Dickason Run	4.34	2.27	47.69	134	63.42	0	0.00	0	0.00	0	0.00
050901010403	Meadow Run-Little Raccoon Creek	1.74	5.52	0.00	387	74.91	1	66.50	1	26.00	1	31.13
050901010404	Deer Creek-Little Raccoon Creek	1.12	2.49	0.00	153	72.75	0	0.00	0	0.00	0	0.00
050901010501	Pierce Run	0.82	2.85	0.00	44	73.45	0	0.00	0	0.00	0	0.00
050901010502	Strongs Run	0.33	2.02	0.00	83	55.18	0	0.00	0	0.00	0	0.00
050901010503	Flatlick Run-Raccoon Creek	0.87	4.78	0.00	342	72.44	0	0.00	0	0.00	0	0.00
050901010504	Robinson Run-Raccoon Creek	1.71	1.53	10.82	121	50.03	0	0.00	0	0.00	0	0.00
050901010601	Indian Creek	0.67	0.62	7.81	52	66.97	0	0.00	0	0.00	0	0.00
050901010602	Barren Creek-Raccoon Creek	1.72	1.33	22.55	100	56.29	0	0.00	0	0.00	0	0.00
050901010603	Mud Creek-Raccoon Creek	0.33	0.34	0.00	76	36.45	0	0.00	0	0.00	0	0.00
050901010604	Bullskin Creek	0.08	0.05	38.66	11	62.59	0	0.00	0	0.00	0	0.00
050901010605	Claylick Run-Raccoon Creek	0.35	0.11	67.30	45	38.21	0	0.00	0	0.00	0	0.00
050901010703	Swan Creek	0.19	0.29	0.00	12	56.45	0	0.00	0	0.00	0	0.00
050901010704	Flatfoot Creek-Ohio River	1.09	0.05	95.65	5	45.77	0	0.00	0	0.00	0	0.00

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050901010706	Little Indian Guyan Creek	0.11	0.45	0.00	37	59.56	0	0.00	0	0.00	0	0.00
050901010707	Johns Creek-Indian Guyan Creek	0.07	0.15	0.00	25	70.48	0	0.00	0	0.00	0	0.00
050901010708	Wolf Creek-Indian Guyan Creek	0.36	0.20	43.92	41	39.82	0	0.00	0	0.00	0	0.00
050901010709	Paddy Creek-Ohio River	0.77	0.13	82.86	29	30.67	0	0.00	0	0.00	0	0.00
050901010801	Dirtyface Creek	2.08	1.47	29.50	30	70.51	0	0.00	0	0.00	0	0.00
050901010802	Black Fork	5.94	3.93	33.83	181	67.91	2	71.50	2	66.00	2	51.03
050901010803	Headwaters Symmes Creek	7.24	4.10	43.45	270	61.93	1	80.50	1	77.00	1	73.15
050901010901	Sand Fork	0.44	0.52	0.00	118	54.07	0	0.00	0	0.00	0	0.00
050901010902	Buffalo Creek	0.00	0.22	0.00	33	65.53	0	0.00	0	0.00	0	0.00
050901010903	Camp Creek-Symmes Creek	1.48	1.46	1.47	194	61.06	2	72.00	2	57.00	2	77.55
050901011001	Johns Creek	0.01	0.10	0.00	24	53.05	0	0.00	0	0.00	0	0.00
050901011002	Long Creek	0.00	0.11	0.00	22	46.40	0	0.00	0	0.00	0	0.00
050901011003	Pigeon Creek-Symmes Creek	0.39	0.34	12.99	52	44.64	0	0.00	0	0.00	0	0.00
050901011004	Aaron Creek-Symmes Creek	0.11	0.22	0.00	102	50.58	0	0.00	0	0.00	0	0.00
050901011005	McKinney Creek-Symmes Creek	0.19	0.17	10.68	27	35.26	0	0.00	0	0.00	0	0.00
050901011007	Buffalo Creek-Ohio River	0.87	0.35	59.87	13	19.16	0	0.00	0	0.00	0	0.00
050901030101	Solida Creek-Ohio River	0.51	0.53	0.00	18	17.30	0	0.00	0	0.00	0	0.00
050901030103	Ice Creek	0.12	0.14	0.00	28	22.54	0	0.00	0	0.00	0	0.00
050901030104	Storms Creek	0.21	0.22	0.00	25	41.53	0	0.00	0	0.00	0	0.00
050901030105	Pond Run-Ohio River	2.95	0.45	84.91	39	26.99	0	0.00	0	0.00	0	0.00
050901030106	Ginat Creek	6.45	0.37	94.34	46	28.81	0	0.00	0	0.00	0	0.00
050901030107	Grays Branch-Ohio River	2.56	0.23	91.14	24	25.11	0	0.00	0	0.00	0	0.00
050901030201	Hales Creek	1.42	1.27	10.57	101	47.83	0	0.00	0	0.00	0	0.00
050901030202	Headwaters Pine Creek	0.47	0.56	0.00	75	69.42	0	0.00	0	0.00	0	0.00
050901030203	Little Pine Creek	0.58	0.57	1.67	76	63.05	0	0.00	0	0.00	0	0.00
050901030204	Howard Run-Pine Creek	0.48	0.71	0.00	129	60.21	0	0.00	0	0.00	0	0.00
050901030205	Lick Run-Pine Creek	0.17	0.43	0.00	177	49.74	0	0.00	0	0.00	0	0.00
050901030501	Headwaters Little Scioto River	2.67	0.86	67.89	44	54.11	0	0.00	0	0.00	0	0.00
050901030502	Sugarcamp Creek	0.17	0.03	79.20	19	62.25	0	0.00	0	0.00	0	0.00
050901030503	Holland Fork	0.09	0.04	56.57	28	45.54	0	0.00	0	0.00	0	0.00
050901030504	McDowell Creek-Little Scioto River	0.38	0.09	76.69	48	58.68	0	0.00	0	0.00	0	0.00
050901030601	Headwaters Rocky Fork	0.13	0.13	0.30	19	63.77	0	0.00	0	0.00	0	0.00
050901030602	Long Run	0.11	0.01	90.85	11	42.23	0	0.00	0	0.00	0	0.00
050901030603	McConnel Creek-Rocky Fork	0.78	0.09	88.65	31	32.83	0	0.00	0	0.00	0	0.00
050901030604	Frederick Creek	0.06	0.02	73.72	10	39.43	0	0.00	0	0.00	0	0.00
050901030605	Wards Run-Little Scioto River	0.28	0.28	1.92	67	30.19	0	0.00	0	0.00	0	0.00
050901030606	Munn Run-Ohio River	0.21	1.31	0.00	28	23.60	0	0.00	0	0.00	0	0.00
050902010201	Headwaters Turkey Creek	0.00	0.07	0.00	5	57.26	0	0.00	0	0.00	0	0.00
050902010202	Odell Creek-Turkey Creek	0.34	0.54	0.00	28	44.98	0	0.00	0	0.00	0	0.00

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050902010203	Pond Run	0.03	0.38	0.00	1	37.00	0	0.00	0	0.00	0	0.00
050902010204	Briery Branch-Ohio River	0.93	4.21	0.00	22	28.46	0	0.00	0	0.00	0	0.00
050902010205	Upper Twin Creek	0.20	1.32	0.00	24	57.60	0	0.00	0	0.00	0	0.00
050902010206	Lower Twin Creek	0.00	1.87	0.00	10	71.64	0	0.00	0	0.00	0	0.00
050902010207	Rock Run-Ohio River	2.16	1.90	12.05	68	39.77	0	0.00	0	0.00	0	0.00
050902010209	Stout Run	0.70	0.83	0.00	22	45.46	0	0.00	0	0.00	0	0.00
050902010210	Quicks Run-Ohio River	1.71	1.19	30.06	63	48.14	0	0.00	0	0.00	0	0.00
050902010301	Headwaters Ohio Brush Creek	1.75	0.07	96.03	19	52.35	0	0.00	0	0.00	0	0.00
050902010302	Elk Run	1.04	0.03	96.92	6	66.16	0	0.00	0	0.00	0	0.00
050902010303	Baker Fork	1.53	0.04	97.11	20	43.03	0	0.00	0	0.00	0	0.00
050902010304	Middle Fork Ohio Brush Creek	6.14	0.42	93.08	54	60.70	0	0.00	0	0.00	0	0.00
050902010305	Flat Run-Ohio Brush Creek	1.00	0.44	56.38	45	61.19	0	0.00	0	0.00	0	0.00
050902010401	Little West Fork Ohio Brush Creek	2.48	0.12	95.28	33	45.01	0	0.00	0	0.00	0	0.00
050902010402	Headwaters West Fork Ohio Brush Creek	7.93	0.25	96.80	103	54.39	0	0.00	0	0.00	0	0.00
050902010403	Cherry Fork	0.40	0.16	59.75	152	37.12	0	0.00	0	0.00	0	0.00
050902010404	Georges Creek-West Fork Ohio Brush Creek	0.48	0.13	73.26	101	40.50	0	0.00	0	0.00	0	0.00
050902010501	Little East Fork-Ohio Brush Creek	2.83	0.21	92.42	189	40.00	0	0.00	0	0.00	0	0.00
050902010502	Lick Fork	0.38	0.04	89.80	49	39.22	0	0.00	0	0.00	0	0.00
050902010503	Bundle Run-Ohio Brush Creek	3.78	0.52	86.25	80	57.53	0	0.00	0	0.00	0	0.00
050902010504	Cedar Run-Ohio Brush Creek	1.98	0.23	88.38	84	47.22	0	0.00	0	0.00	0	0.00
050902010505	Beasley Fork	0.85	0.33	60.42	35	53.39	0	0.00	0	0.00	0	0.00
050902010506	Soldiers Run-Ohio Brush Creek	1.08	2.19	0.00	96	52.12	0	0.00	0	0.00	0	0.00
050902010601	Crooked Creek-Ohio River	1.49	1.34	10.04	55	52.34	0	0.00	0	0.00	0	0.00
050902010604	Big Threemile Creek	0.26	0.57	0.00	45	57.70	0	0.00	0	0.00	0	0.00
050902010605	Lawrence Creek-Ohio River	0.51	1.08	0.00	52	51.98	0	0.00	0	0.00	0	0.00
050902010701	Headwaters West Fork Eagle Creek	6.09	0.26	95.68	51	66.16	0	0.00	0	0.00	0	0.00
050902010702	Headwaters East Fork Eagle Creek	0.58	0.05	90.82	38	34.68	0	0.00	0	0.00	0	0.00
050902010703	Hills Fork-East Fork Eagle Creek	0.48	0.22	54.37	30	68.45	0	0.00	0	0.00	0	0.00
050902010704	Rattlesnake Creek-West Fork Eagle Creek	1.14	0.39	65.62	18	61.95	0	0.00	0	0.00	0	0.00
050902010705	Eagle Creek	0.17	0.95	0.00	81	68.83	0	0.00	0	0.00	0	0.00
050902010801	Redoak Creek	5.42	0.51	90.63	17	73.96	0	0.00	0	0.00	0	0.00
050902010802	Headwaters Straight Creek	21.67	0.19	99.12	56	67.45	0	0.00	0	0.00	0	0.00
050902010803	Evans Run-Straight Creek	1.90	0.35	81.46	28	53.42	0	0.00	0	0.00	0	0.00
050902010804	Lee Creek-Ohio River	0.45	1.23	0.00	12	60.14	0	0.00	0	0.00	0	0.00
050902010901	Headwaters East Fork Whiteoak Creek	15.93	0.13	99.20	36	49.67	0	0.00	0	0.00	0	0.00
050902010902	Slabcamp Run-East Fork Whiteoak Creek	30.82	0.14	99.53	47	55.01	0	0.00	0	0.00	0	0.00
050902010903	Little North Fork-North Fork Whiteoak Creek	32.84	0.36	98.90	41	56.60	0	0.00	0	0.00	0	0.00
050902010904	Flat Run-North Fork Whiteoak Creek	48.28	0.49	98.99	62	60.55	0	0.00	0	0.00	0	0.00
050902011001	Sterling Run	55.30	0.41	99.25	41	51.29	0	0.00	0	0.00	0	0.00

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050902011002	Miranda Run-Whiteoak Creek	22.29	0.26	98.84	50	56.64	0	0.00	0	0.00	0	0.00
050902011003	Big Run-Whiteoak Creek	4.57	0.55	87.93	20	61.40	0	0.00	0	0.00	0	0.00
050902011102	Turtle Creek-Ohio River	0.34	0.01	95.82	4	37.00	0	0.00	0	0.00	0	0.00
050902011103	West Branch Bullskin Creek	9.66	0.80	91.77	88	51.25	0	0.00	0	0.00	0	0.00
050902011104	Bullskin Creek	5.71	0.53	90.65	78	63.52	0	0.00	0	0.00	0	0.00
050902011106	Bear Creek-Ohio River	1.26	0.84	33.26	63	57.72	0	0.00	0	0.00	0	0.00
050902011107	Little Indian Creek-Ohio River	0.66	0.98	0.00	15	58.17	0	0.00	0	0.00	0	0.00
050902011201	Headwaters Big Indian Creek	9.75	0.77	92.12	76	52.40	0	0.00	0	0.00	0	0.00
050902011202	North Fork Indian Creek-Big Indian Creek	7.32	0.81	88.99	59	60.61	0	0.00	0	0.00	0	0.00
050902011203	Boat Run-Ohio River	0.73	0.25	65.07	15	31.61	0	0.00	0	0.00	0	0.00
050902011204	Ferguson Run-Twelvemile Creek	9.51	0.92	90.32	42	47.04	0	0.00	0	0.00	0	0.00
050902011206	Tenmile Creek	2.56	0.18	93.08	26	36.64	0	0.00	0	0.00	0	0.00
050902011208	Ninemile Creek-Ohio River	1.68	0.16	90.28	16	39.73	0	0.00	0	0.00	0	0.00
050902020101	Headwaters Little Miami River	43.41	0.81	98.14	66	41.79	0	0.00	0	0.00	0	0.00
050902020102	North Fork Little Miami River	33.43	1.50	95.51	138	42.52	1	40.00	1	23.00	1	18.58
050902020103	Buffenbarger Cemetery-Little Miami River	36.11	0.42	98.83	67	36.06	0	0.00	0	0.00	0	0.00
050902020104	Yellow Springs Creek-Little Miami River	18.19	0.25	98.63	49	37.00	0	0.00	0	0.00	0	0.00
050902020201	North Fork Massies Creek	46.10	0.29	99.36	60	31.63	0	0.00	0	0.00	0	0.00
050902020202	South Fork Massies Creek	50.46	0.26	99.49	37	46.86	0	0.00	0	0.00	0	0.00
050902020203	Massies Creek	13.87	0.13	99.06	25	33.19	0	0.00	0	0.00	0	0.00
050902020204	Little Beaver Creek	12.57	0.22	98.22	28	16.03	0	0.00	0	0.00	0	0.00
050902020205	Beaver Creek	15.66	3.31	78.85	74	33.88	2	47.50	2	38.50	0	0.00
050902020206	Shawnee Creek-Little Miami River	16.55	0.29	98.22	38	30.37	0	0.00	0	0.00	0	0.00
050902020301	Headwaters Anderson Fork	41.01	0.16	99.60	36	40.40	0	0.00	0	0.00	0	0.00
050902020302	Painters Run-Anderson Fork	34.22	0.27	99.22	29	53.41	0	0.00	0	0.00	0	0.00
050902020303	Mouth Anderson Fork	14.90	0.11	99.26	8	45.40	0	0.00	0	0.00	0	0.00
050902020401	North Branch Caesar Creek	41.25	0.05	99.88	13	41.59	0	0.00	0	0.00	0	0.00
050902020402	Upper Caesar Creek	38.69	0.08	99.78	12	34.21	0	0.00	0	0.00	0	0.00
050902020403	South Branch Caesar Creek	38.80	0.17	99.56	12	55.36	0	0.00	0	0.00	0	0.00
050902020404	Middle Caesar Creek	13.24	0.28	97.86	29	44.93	0	0.00	0	0.00	0	0.00
050902020405	Flat Fork	46.32	1.47	96.82	60	59.74	0	0.00	0	0.00	0	0.00
050902020406	Lower Caesar Creek	10.86	0.19	98.27	28	58.11	0	0.00	0	0.00	0	0.00
050902020501	Sugar Creek	15.02	0.18	98.77	39	29.21	0	0.00	0	0.00	0	0.00
050902020502	Town of Bellbrook-Little Miami River	6.98	0.08	98.80	11	24.61	0	0.00	0	0.00	0	0.00
050902020503	Glady Run	12.26	0.62	94.96	17	29.25	0	0.00	0	0.00	0	0.00
050902020504	Newman Run-Little Miami River	9.47	0.50	94.68	111	52.63	0	0.00	0	0.00	0	0.00
050902020601	Dutch Creek	22.99	0.75	96.75	14	62.40	0	0.00	0	0.00	0	0.00
050902020602	Headwaters Todd Fork	27.38	0.23	99.14	30	46.92	0	0.00	0	0.00	0	0.00
050902020603	Lytle Creek	11.11	0.38	96.63	21	38.18	0	0.00	0	0.00	0	0.00

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050902020604	Headwaters Cowan Creek	32.23	0.17	99.48	27	37.01	0	0.00	0	0.00	0	0.00
050902020605	Wilson Creek-Cowan Creek	8.87	0.46	94.83	27	57.75	0	0.00	0	0.00	0	0.00
050902020606	Little Creek-Todd Fork	20.45	1.01	95.07	28	77.20	0	0.00	0	0.00	0	0.00
050902020701	East Fork Todd Fork	30.44	0.48	98.43	41	62.29	1	74.00	1	70.00	1	62.75
050902020702	Second Creek	34.50	0.42	98.78	34	51.51	0	0.00	0	0.00	0	0.00
050902020703	First Creek	42.06	0.60	98.57	46	44.79	0	0.00	0	0.00	0	0.00
050902020704	Lick Run-Todd Fork	22.73	0.47	97.94	96	56.84	0	0.00	0	0.00	0	0.00
050902020801	Ferris Run-Little Miami River	9.32	0.42	95.53	68	53.37	0	0.00	0	0.00	0	0.00
050902020802	Little Muddy Creek	22.37	0.72	96.78	56	22.69	0	0.00	0	0.00	0	0.00
050902020803	Turtle Creek	7.32	0.26	96.48	90	29.54	0	0.00	0	0.00	0	0.00
050902020804	Halls Creek-Little Miami River	4.92	0.48	90.14	72	32.09	0	0.00	0	0.00	0	0.00
050902020901	Muddy Creek	15.05	0.21	98.61	26	10.80	0	0.00	0	0.00	0	0.00
050902020902	O'Bannon Creek	31.89	1.99	93.76	200	59.00	0	0.00	0	0.00	0	0.00
050902020903	Salt Run-Little Miami River	13.35	0.20	98.49	59	33.09	0	0.00	0	0.00	0	0.00
050902021001	Turtle Creek	21.19	0.50	97.65	27	60.05	0	0.00	0	0.00	0	0.00
050902021002	Headwaters East Fork Little Miami River	25.93	0.29	98.89	40	45.73	0	0.00	0	0.00	0	0.00
050902021003	Headwaters Dodson Creek	26.99	0.21	99.22	31	43.01	0	0.00	0	0.00	0	0.00
050902021004	Anthony Run-Dodson Creek	46.46	0.22	99.53	18	49.21	0	0.00	0	0.00	0	0.00
050902021005	West Fork East Fork Little Miami River	41.79	0.56	98.66	31	46.30	0	0.00	0	0.00	0	0.00
050902021006	Glady Creek-East Fork Little Miami River	39.23	0.44	98.87	49	53.86	0	0.00	0	0.00	0	0.00
050902021101	Solomon Run-East Fork Little Miami River	39.66	0.56	98.59	95	50.55	0	0.00	0	0.00	0	0.00
050902021102	Fivemile Creek-East Fork Little Miami River	48.14	1.27	97.36	156	57.47	0	0.00	0	0.00	0	0.00
050902021103	Todd Run-East Fork Little Miami River	37.57	1.22	96.76	81	57.08	0	0.00	0	0.00	0	0.00
050902021201	Poplar Creek	29.61	2.21	92.53	138	62.05	0	0.00	0	0.00	0	0.00
050902021202	Cloverlick Creek	39.25	1.15	97.07	134	60.78	0	0.00	0	0.00	0	0.00
050902021203	Lucy Run-East Fork Little Miami River	8.51	0.65	92.41	106	49.17	0	0.00	0	0.00	0	0.00
050902021204	Backbone Creek-East Fork Little Miami River	14.36	0.88	93.84	57	48.27	0	0.00	0	0.00	0	0.00
050902021301	Headwaters Stonelick Creek	42.38	1.86	95.61	109	52.47	0	0.00	0	0.00	0	0.00
050902021302	Brushy Fork	39.39	0.54	98.63	40	52.40	0	0.00	0	0.00	0	0.00
050902021303	Moores Fork-Stonelick Creek	41.27	1.33	96.78	80	46.82	0	0.00	0	0.00	0	0.00
050902021304	Lick Fork-Stonelick Creek	16.65	1.59	90.44	84	53.69	0	0.00	0	0.00	0	0.00
050902021305	Salt Run-East Fork Little Miami River	3.75	0.23	93.95	85	25.07	0	0.00	0	0.00	0	0.00
050902021401	Sycamore Creek	3.48	0.02	99.37	5	59.01	0	0.00	0	0.00	0	0.00
050902021402	Polk Run-Little Miami River	5.06	0.21	95.85	14	16.91	0	0.00	0	0.00	0	0.00
050902021403	Horner Run-Little Miami River	3.34	0.44	86.98	29	35.47	0	0.00	0	0.00	0	0.00
050902021404	Duck Creek	3.05	0.00	99.86	1	14.00	0	0.00	0	0.00	0	0.00
050902021405	Dry Run-Little Miami River	2.80	1.02	63.53	23	34.24	0	0.00	0	0.00	0	0.00
050902021406	Clough Creek-Little Miami River	2.77	0.60	78.42	16	35.09	0	0.00	0	0.00	0	0.00
050902030101	East Fork Mill Creek-Mill Creek	8.19	0.72	91.18	53	24.43	0	0.00	0	0.00	0	0.00

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050902030102	West Fork Mill Creek	3.29	0.07	97.79	12	36.69	0	0.00	0	0.00	0	0.00
050902030103	Sharon Creek-Mill Creek	5.06	0.09	98.24	5	31.89	0	0.00	0	0.00	0	0.00
050902030104	Congress Run-Mill Creek	2.52	0.02	99.39	2	24.42	0	0.00	0	0.00	0	0.00
050902030105	West Fork-Mill Creek	1.23	0.00	100.00	0	0.00	0	0.00	0	0.00	0	0.00
050902030201	Town of Newport-Ohio River	1.99	0.18	91.15	2	49.20	0	0.00	0	0.00	0	0.00
050902030202	Dry Creek-Ohio River	1.52	0.01	99.03	1	18.00	0	0.00	0	0.00	0	0.00
050902030203	Muddy Creek	1.57	0.07	95.73	3	24.39	0	0.00	0	0.00	0	0.00
050902030204	Garrison Creek-Ohio River	1.10	0.26	76.10	6	35.40	0	0.00	0	0.00	0	0.00
051201010101	Headwaters Wabash River	42.05	0.34	99.19	83	47.45	0	0.00	0	0.00	0	0.00
051201010102	Stoney Creek-Wabash River	24.52	0.80	96.72	77	35.82	0	0.00	0	0.00	0	0.00
051201010103	Toti Creek-Wabash River	18.63	0.50	97.29	54	32.41	0	0.00	0	0.00	0	0.00
051201010201	Chickasaw Creek	35.76	0.12	99.65	42	39.35	0	0.00	0	0.00	0	0.00
051201010202	Headwaters Beaver Creek	34.72	0.20	99.42	51	33.85	0	0.00	0	0.00	0	0.00
051201010203	Coldwater Creek	30.84	0.12	99.62	29	41.53	0	0.00	0	0.00	0	0.00
051201010204	Grand Lake-St Marys	26.39	1.53	94.18	232	36.39	1	25.00	1	16.00	1	12.19
051201010301	Little Beaver Creek	29.44	0.08	99.73	14	32.38	0	0.00	0	0.00	0	0.00
051201010302	Hardin Creek-Beaver Creek	43.24	0.17	99.61	26	25.81	0	0.00	0	0.00	0	0.00
051201010303	Prairie Creek-Beaver Creek	40.47	0.18	99.56	53	59.35	0	0.00	0	0.00	0	0.00
051201010401	Wilson Creek-Limberlost Creek	26.11	0.16	99.41	1	32.00	0	0.00	0	0.00	0	0.00
051201010501	Hickory Branch-Wabash River	34.12	0.91	97.33	18	50.04	0	0.00	0	0.00	0	0.00
051201030101	Little Mississinewa River	25.67	0.00	100.00	0	0.00	0	0.00	0	0.00	0	0.00
051201030102	Gray Branch-Mississinewa River	33.70	0.42	98.76	57	39.48	0	0.00	0	0.00	0	0.00
051201030103	Jordan Creek-Mississinewa River	27.30	0.25	99.10	7	39.03	0	0.00	0	0.00	0	0.00