City of Novi Police Department
Novi, Michigan

Indoor Gun Range & Training Facility
Assessment Analysis
with Master Plan for Novi Police
Department at Community Build Out
October 23, 2006

Wold Architects And Engineers
901 Tower Drive #325
Troy, Michigan 48098
MEMORANDUM

TO: Clay J. Pearson
   City Manager

FROM: David E. Molloy
      Chief of Police

DATE: October 10, 2006

SUBJECT: Background Discussion – Indoor Gun Range and Training Facility Assessment Analysis with Master Plan for Novi Police Department Facility Needs at Build-out

Attached please find a report from Wold Architects & Engineers finalizing their review and analysis of the Novi Police Department as approved by City Council on March 20, 2006. Their review relates to the potential construction of an indoor gun range, potential expansion of our training facility and preparing the police facility for community build-out. It is anticipated this analysis will be presented to City Council for review on October 23, 2006 or at a future City Council work session. The purpose of this document is to provide City Council with a summary of the background information used by Police Department staff and Wold in the overall analysis. This data and information will assist City Council in their discussion and decision-making process as it relates to this project.

It is my professional recommendation as Chief of Police, and as a Novi police officer for (17) years, that the city proceed with Option I, an indoor gun range at the City’s Field Services Complex (FSC) on Delwal Drive, and expansion of our Police headquarters at the Civic Center Campus when demand dictates.

The complete analysis process involved members from all levels, sections and divisions of the Novi Police Department. Our intention from the outset was to have a very inclusive and transparent process that valued and embraced the thoughts, ideas and suggestions of all (99) men and women who work in the facility on a daily basis. The Core Planning Group consisted of representatives from Uniform Patrol, Investigations, Records, Communications and Administration. Their work and ideas were invaluable to this process and added a great deal of guidance to the work being conducted by Wold Architects.
**Background – Federal Forfeitures**

Since a significant part of this build-out proposal may involve the potential use of Federal forfeiture funds, I thought it appropriate to provide a brief history on when the funds were seized and the total received to date.

On March 18, 2004 the Novi Police Department responded to a call for assistance at the Studio Plus Hotel in Novi. As a result of that call, police officers seized over $3,400,000 in suspected narcotic proceeds. In the early morning hours of March 19, 2004, Novi officers, in cooperation with agents from the Drug Enforcement Administration (DEA), executed a search warrant in the City of Northville and seized an additional $1,400,000. These initial seizures set the stage for one of the largest international narcotic trafficking and money laundering investigations ever initiated in the State of Michigan.

During the course of this case, the Novi Police Department has been very active in this ongoing investigation behind illegal narcotic trafficking. Novi officers and DEA agents were involved in several instances of cash seizures totaling approximately $14,900,000 in proceeds from narcotic sales, including the original seizures of March 18 and 19, 2004.

This money was seized and forfeited by the U.S. Department of Justice, Drug Enforcement Administration and Novi is entitled to a share of that money. On October 10, 2006 Novi received an additional $1,161,953 in Federal forfeitures. To date, Novi has received $5,606,559 as its share of these forfeitures. It is anticipated that Novi will receive an additional $1,070,396 in cash. The outstanding funds will likely be comprised of distributions in the next 12 – 18 months.

In addition to the cash seizures, the Novi Police Department is working with the Drug Enforcement Administration and the Internal Revenue Service to seize and forfeit several pieces of real property and other assets with an estimated value of $1,000,000. If successful, the Novi Police Department could receive up to $300,000 (30%) of the seized property. However, this is only an estimate. This amount could change significantly in either direction and will not be known until the forfeited properties are disposed of by the Department of Justice via the United States Marshalls Service. This money will most likely be received in several payments over the next year and a half.

- $5,606,559 Money Received
- $1,070,396 Money Anticipated
- $6,676,955 Total Derived From Forfeited Cash Seizures

- $300,000 Derived From Forfeited Real Property – Estimate

- $6,976,954 – Estimated TOTAL
A complete summary of all federal forfeiture funds received and expended can be found in Appendix A of this report.

Population Data

A considerable portion of the analysis conducted involves a space summary program for the anticipated increase in Police Department staff and needs over the next 15 – 20 years. Core Planning Group members worked with Planning Department staff in order to provide the most accurate population projection of Novi as we approach community build-out. Their estimates (below) are projections recommended for use in the respective analysis for both the Police Department and the Department of Public Works. The Planning Department estimates are based on actual permits issued, approved plans and an analysis of vacant properties. Staff also utilized the 2004 Master Plan for Land Use as a measurement in these projections.

<table>
<thead>
<tr>
<th>Year</th>
<th>Projected Population</th>
<th>Projected Population Growth</th>
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<tbody>
<tr>
<td>2006</td>
<td>54423</td>
<td>N/A</td>
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<tr>
<td>2007</td>
<td>56255</td>
<td>3.26%</td>
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<tr>
<td>2008</td>
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<tr>
<td>2010</td>
<td>59526</td>
<td>1.84%</td>
</tr>
<tr>
<td>2011</td>
<td>60764</td>
<td>2.04%</td>
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<tr>
<td>2012</td>
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<tr>
<td>2013</td>
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<tr>
<td>2015</td>
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<tr>
<td>2017</td>
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<tr>
<td>2018</td>
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<tr>
<td>2019</td>
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<td>0.49%</td>
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<tr>
<td>2020</td>
<td>66751</td>
<td>0.49%</td>
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<tr>
<td>2021</td>
<td>67078</td>
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<tr>
<td>2022</td>
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<td>2023</td>
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<tr>
<td>2024</td>
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<td>0.48%</td>
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*Population estimates provided by the City of Novi Planning Department based on actual permits issued, approved plans and analysis of vacant properties

Population estimates are subject to change depending on our economic climate, build-out of planned projects and numerous factors. The main thing we learned is that, while the build-out population may be in the range of 67,000 – 70,000, it will be larger than today and will require additional resources to continue the delivery of quality services. Moreover, by implementing continued quality service and facility improvements, the estimated 54,000 community members will benefit from the level of service provided by our Police Department.
Projected Police Department Staffing

The Novi Police Department currently has (70) sworn police officers as authorized in the FY 2006/2007 budget. In addition, there are (29) authorized civilian support staff. Based on the current population estimates and projections, it is feasible that the Novi Police Department could add an additional (32) sworn police officers between now and 2024. It is also anticipated that we could add five additional support staff to assist in the operations of the Communications Division and Records Section.

The table below is one example of a long-term staffing chart suggesting the hiring of two additional police officers per year through 2024. The FBI average for officers per thousand citizens of cities comparable in size to Novi in the East North Central portion of the Midwest is 1.7 officers per 1,000 citizens. Traditionally we have used the benchmark of 1.5 officers per 1,000 citizens as a staffing goal and our current staffing level is 1.29 officers per 1,000 citizens.

<table>
<thead>
<tr>
<th>Year</th>
<th>Potential Number of Additional Authorized Positions</th>
<th>Authorized Sworn Positions</th>
<th>Projected Population</th>
<th>Projected Population Growth</th>
<th>Ratio of Officers per 1000 Citizens</th>
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<tbody>
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*Population estimates provided by the City of Novi Planning Department based on actual permits issued, approved plans and analysis of vacant properties
**According to the FBI's 2005 Uniform Crime Report, the average ratio for police departments in the East North Central portion of the Midwest is 1.7
(Novi is considered in the East North Central portion of the Midwest)
Discussion – Indoor Gun Range

The Wold analysis contains two options that consider a potential addition of an indoor gun range at the Field Services Complex (FSC) or at the existing Police facility in the Civic Center Campus. This proposed new construction (whether at FSC or current facility) would contain the indoor range plus an office, a gun cleaning/repair room, and a storage/supply room. A separate Firearms Training System (FATS) room is also recommended for consideration at the current Police facility.

The range would consist of eight lanes for shooting, associated target systems and bullet traps. The building would be designed to contain ALL projectiles and would meet or exceed all current safety and environmental standards. Pistols, shotguns, and rifles could be shot in the range building. A rough estimate of the building size would be 140 feet by 40 feet. Officers could shoot from distances up to 25 yards.

Current Range Use – Background

The Police Department currently uses an indoor pistol range in the City of Farmington and pays a users fee of $75.00 per day/twice a month for a total of $1,800 annually. Additionally, a rifle range is used in Canton to train officers with our patrol rifles. Novi pays a users fee of $400 per day/twice a month for a total of $9,600 per year.

The City of Farmington range was built in 1975 and is located near Nine Mile Road and Farmington Roads in the Farmington Public Works complex. This facility is located approximately three miles from the City of Novi’s eastern border of Haggerty Road. The City of Novi did not provide financial assistance in the building of the range and has not assisted in the periodic maintenance costs.

The Farmington Range is a five lane range using a retrievable target system. The range has a standard armor plated backstop that stops the expelled rounds. Police Departments from Novi, South Lyon, Walled Lake, Wolverine Lake and Wixom utilize this range. Rifles cannot be shot at this range. There are no specialized filters at the Farmington range. Air is changed by way of the exhaust vents at the range. The exhaust pulls air in and pushes air back out through the roof vents. The City of Farmington does not have a line item budget for the maintenance of the range. If a range item needs repairing, an officer along with a DPW employee will make the repairs.

All maintenance is handled through the Farmington Department of Public Works (DPW). DPW staff clean the range weekly and empty the bullet traps periodically. The track that moves the targets back and forth is regularly broken and the fuses constantly blow at the circuit box in the command center. The
targeting system also suffers regular breakdowns and does not rotate (face/edge) all the time.

During FY 2004 – 2005, the Farmington range was only open seven of the twelve months (58.3% of the time) it was reserved for the Novi Police Department. In addition, during FY 2005 – 2006, the range was open for Novi officers eight out of twelve months (66.6% of the time).

Novi Police personnel currently utilize an outdoor shooting range in Canton Township for annual qualification with the .223 caliber patrol rifles. The use of this range will continue even if an indoor gun range is constructed in Novi. Each Novi officer is required to qualify with each firearm (handgun & rifle) annually. To achieve this proficiency, continual practice and training is essential. Currently an officer is scheduled to practice (12) times per year; however the actual number of practice sessions is dependent on the Farmington range being operational. Proficiency is essential for officer safety, the protection of the community and for reducing city liability.

It is anticipated that if we construct an indoor gun range we can reduce the use of the Canton range due to increased firing of the rifles at the new indoor gun range. It is estimated that we will reduce the use of the Canton range by four days, thus saving $1,600 per year.

**Comparison Overview of Current Ranges**

Several police agencies throughout southeast Michigan own and operate their own indoor gun range. Police Department staff contacted local agencies with gun ranges similar in design and construction to the range being proposed as part of this analysis. It is important for discussion purposes to compare ranges similar in design in order to best capture potential recurring operating and maintenance costs. While gathering this information it became apparent there was a wide spectrum of maintenance schedules. Some agencies cleaned and performed maintenance every six months while others had not performed any in years.

The facilities contacted use range backstops that are constructed of granulated rubber or a combination of rubber and metal. These ranges are described as Reclining GranTrap Ranges. The rubber backstop greatly reduces the environmental impact from lead bullets. With a granulated rubber backstop the fired rounds are captured intact versus a metal backstop where the projectile fragments on impact; thus increasing the amount of lead that is deposited into the air. When the round is captured intact, there is virtually no lead dust or bullet fragmentation. An additional benefit of using the rubber backstop is that the life of the air filtration system is greatly increased. During regularly scheduled maintenance, spent bullets are separated from the granulated rubber for disposal.
The rubber backstops are constructed by utilizing a thick layer of granulated rubber material. The granulated rubber is supported by a reclined armor plated structure. The backstop is sloped, thicker at the bottom and thinner towards the top. The granulated rubber is then covered with a self-healing rubber cover. This cover helps reduce the amount of debris, gunpowder and paper that may enter the bullet trap. This cover also makes separating the rubber granulates from the spent bullets much easier during scheduled maintenance.

Modern range filtration systems consist of three filters. The primary filter removes the larger particulates. The intermediate filter further refines the air quality. The final filter is a High Efficiency Particulate Air (HEPA) filter. After the air passes through the final filter, it meets or exceeds all State, Environmental Protection Agency (EPA) and Occupational Health and Safety Administration (OSHA) standards. The filters are continuously monitored by an air flow sensor. When the air flow is sufficiently restricted, the system will indicate that the filters need to be replaced. The life of the filters is dependent upon several factors including, but not limited to, the number of rounds fired and whether the filtration system directly ventilates or re-circulates the air. Direct ventilation systems move a greater volume of air through the triple filtration system. Re-circulated air is typically exchanged four times per hour according to most departments using this system.

Staff spoke with range ventilation experts who routinely design and install ventilation and filtration systems for indoor gun ranges. The primary filter is designed to take out the largest particulates (in size). The intermediate filter is described as the “the workhorse” because it takes out approximately 65% of all contaminates. The HEPA filter then takes out 99.99% of the remaining contaminates. After passing through the HEPA filter the air would be of breathable quality.

There are two different types of ventilation systems for indoor gun ranges. The first is a Direct Ventilation system that brings in outside air, regulates the temperature (heating or cooling it), then transfers it in to the range. Once the air is contaminated it then passes through the described filters and is expelled to the outside. Re-circulated air is processed in the same manner, except that after passing through the filters, the air is re-circulated back in to the range. Direct ventilation systems on average increase operating costs due to the constant heating/cooling of the air. The filters also must be replaced more frequently due to the volume of air that passes through the filter.

Staff has spoken with four local police departments who operate indoor gun ranges utilizing granular rubber with armor plated backstops. The Oakland County Sheriff’s Department, the Dearborn Heights Police Department, the Waterford Township Police Department and the Clinton Township Police Department all have ranges of this type. The Core Planning Group actually
conducted site visits to the indoor gun ranges at Waterford Township and at the Dearborn Heights. The Dearborn Heights, Waterford Township and Clinton Township ranges are three of the newest, state-of-the-art, indoor gun ranges built in our area in recent years. The following is a breakdown of the yearly recurring maintenance costs at these departments:

Dearborn Heights Police Department

This range was constructed in 2003 and has a direct ventilation filtration system with filtration that consists of three filters; a primary, intermediate and HEPA. The system is equipped with a monitor that signals when the filters require replacement. There has been no maintenance performed on the range or the filters since they were originally installed. No problems have been reported.

The range and filters are scheduled for cleaning/replacement this year. The work will be performed by Detroit Bullet Trap Incorporated who provided a quote of $6,000. This price includes bullet trap cleaning/repair, total range cleaning and complete filter replacement.

Oakland County Sheriff's Department

This range was constructed in 1972 and was renovated in 2002. The range is equipped with a direct ventilation filtration system. It is not known how frequently the filters are replaced but the task is performed by county employees.

The cleaning and maintenance of the range is performed by Best Technology Systems, Inc. of Plainfield, Illinois. The cost per cleaning is approximately $4,000 to $5,000 when the cleaning is performed. They were unable to provide how often this type of maintenance is performed.

Clinton Township Police Department

Originally constructed in 2001, this range is equipped with a direct ventilation filtration system. Their schedule for filter replacement occurs every eighteen (18) months. The system is equipped with a monitor that signals when filter replacement is necessary. Because the filters are replaced on such a frequent basis, the monitor has never signaled that maintenance was required. Filter replacement is contracted out to Steele Johnson LLC of Auburn Hills, Michigan. The cost of replacing all of the filters is $10,000 to $12,000. This cost is significant because this range was constructed to meet minimum EPA standards at time of construction. EPA standards have increased to present day standards and this requires Clinton Township to continually change their filters.

The cleaning and maintenance of the range is performed by Best Technology Systems, Incorporated. The cost per cleaning is $1,300. Cleaning and maintenance is scheduled on an annual basis.
Waterford Township Police Department

This range was constructed in 2001 and is outfitted with a re-circulated air filtration system. The system re-circulates the air at a rate of four times per hour. The filters are changed every eighteen (18) to twenty-four (24) months. The cost of replacing all of the filters is $1,500. Filter replacement is contracted out with a local heating and cooling company.

Routine cleaning (floor cleaning) is performed by range personnel. This maintenance consists of sweeping and mopping the entire floor from the firing line to the bullet trap. Maintenance of the bullet trap is performed by Best Technology Systems, Incorporated. Yearly maintenance was not performed because the system was functioning properly. After five years of use the department contracted to have the entire system repaired and cleaned at a cost of $6,355. The maintenance returned the system to a “like new” condition.

Meggitt Defense System Caswell (MDS Caswell)

Meggitt Defense System Caswell (MDS Caswell) manufactured and installed the ranges operated by the Oakland County Sheriff Department, and the Clinton Township and Waterford Township Police Departments. MDS Caswell manufactures a variety of range systems. The range system selected by most police departments is the Reclining GranTrap. This is the system that was selected by the police departments listed previously.

Staff contacted representatives of MDS Caswell to obtain further information on range maintenance fees. All fees are based upon the Reclining GranTrap range system with eight shooting positions. Once the range is constructed there is a one year warranty. At the time of installation, our range personnel will be trained to operate and maintain the entire system. MDS Caswell will only service the system, they will not perform the necessary cleaning procedures as they are not EPA or OSHA certified.

MDS Caswell offers a regularly scheduled maintenance program. The program consists of inspecting and repairing or replacing any worn or broken parts. This includes the target system as well as the backstop. With the regularly scheduled maintenance program of three visits per year, the cost is $1,500 per visit. This type of maintenance includes the repairing or replacement of the self-healing rubber cover and adding additional granulated rubber to the backstop. The target system would be inspected and lubricated. MDS Caswell indicated that all of this regularly scheduled maintenance can be performed by our personnel after appropriate training and instruction. Most police departments elect to perform their own maintenance but MDS Caswell offers the option as a service to their customers.
The system requires a complete cleaning and maintenance after approximately 70,000 rounds per firing position. If we constructed an eight position range, we would need to schedule this maintenance after firing 560,000 rounds.

**Best Technology Systems, Incorporated**

MDS Caswell employees do not perform the complete clean out and maintenance procedure. This work is performed by Best Technology Systems, Inc. due to EPA and OSHA requirements. Best Technology Systems, Inc. was contacted and they provided a list of services that they perform during a complete clean out.

- HEPA vacuum and wet wipe of the entire facility including walls, vents, baffles, target tracks and carriers, shooting booths, and underneath/behind the bullet trap.
- Remove and clean used self-healing rubber cover.
- Replace and tighten any loose or missing nuts or bolts from the bullet trap.
- Separating of spent bullets from the granulated rubber backstop.
- Removal of spent bullets from the bullet trap and all cleaning supplies as lead contaminated hazardous waste. These items will be transported to an approved disposal site.

The cost of this procedure is $6,355. The cost may be slightly higher depending upon the need for additional granulated rubber or self-healing rubber covers. Additional granulated rubber can be purchased directly from MDS Caswell for $20 per (50) pound bag. The backstop may need (100) to (200) additional pounds after the above procedure is performed. The self-healing rubber covers cost $275 each. One cover will cover an entire shooting position. We also have the option of purchasing a patch instead of a complete cover. These patches could be utilized because most of the wear occurs in the center of the cover (center mass). The cost is $76 per patch. Our range personnel would have the necessary training to replace and repair the covers.

**Recurring Cost Analysis**

Depending upon the maintenance schedule that is selected, the cost could vary considerably. All aspects of cleaning and maintenance are important. It is vital that a balance is maintained between fiscal responsibilities and the obligation to maintain a safe environment. The Novi Police Department is committed to providing the healthiest and safest environment for all staff.

The following maintenance schedule is recommended. Using the above estimates, a complete clean out would be required every three years. **At current pricing levels the Novi maintenance cost would be $6,355.** The filtration system should be changed every (18) months. It is expected that the cost would be similar to the Waterford Township range of $1,500 per filter change.
Using this schedule and current pricing, the total estimated cost of indoor gun range maintenance is projected to be $9,355 over a three year period.

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<tr>
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<th>Filter Replacement</th>
<th>Filter Replacement</th>
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<td>36 Months</td>
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<td>54 Months</td>
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<td>72 Months</td>
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<tr>
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<th>Filter Replacement and Complete Clean Out</th>
<th>Filter Replacement and Complete Clean Out</th>
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<td>18 Months</td>
<td>$1,500</td>
<td>$7,855</td>
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<td>36 Months</td>
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<td>54 Months</td>
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<tr>
<td>72 Months</td>
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Annual Rent for Farmington Range $1,800  
Reduction in Use of Canton Range $1,600  
Total Annual Operating Savings $3,400

| Savings from Deletion or Reduction of Range Rental Fees Recurring Maintenance Costs Net Savings |
|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
| Year 1 |
| $3,400 | $0 | $3,400 |
| Year 2 |
| $3,400 | $1,500 | $1,900 |
| Year 3 |
| $3,400 | $7,855 | -$4,455 |
| Net Savings Over Three (3) Year Period $845 |

Ammunition Analysis

The police department utilizes two different firearms. Each officer is issued a handgun manufactured by Glock. The officers can choose between a Model 22 or Model 23 both of which are chambered in .40 caliber. Each uniformed patrol officer is assigned a patrol rifle at the beginning of each shift. This weapon, manufactured by Sig Sauer, is the model SG-551, which is chambered in .223 caliber. Personnel assigned to the Investigative Section have the option of signing out a patrol rifle on a needs basis. Both of these weapons require regular training. Per department policy and suggested state guidelines, all sworn members are required to qualify annually with each weapon.

During Fiscal Year 2005 – 2006 the department had the following expenditures on ammunition.

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</tr>
<tr>
<td>Rifle .223 caliber</td>
<td>14,500</td>
<td>$3762</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>$6989</td>
</tr>
</tbody>
</table>
I project that we will shoot approximately 70,000 rounds of handgun ammunition and 30,000 rounds of patrol rifle ammunition each year if we construct an indoor range. At our current staffing level, the average officer would shoot 1000 rounds of handgun ammunition and 425 rounds of patrol rifle ammunition each year. At current pricing levels, the cost the handgun ammunition is expected to be $7840, rifle ammunition is expected to be $5940.

The increase in ammunition cost is attributed to the increase in the availability of our own range. During FY 2004 – 2005 the Farmington range was only open seven of the twelve months. During FY 2005 – 2006 the Farmington range was open eight out of twelve months.

<table>
<thead>
<tr>
<th></th>
<th>Ammunition Cost FY 05-06</th>
<th>Projected Cost for FY 06-07</th>
<th>Increase in Costs From Additional Proficiency Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Handgun</td>
<td>$3,227</td>
<td>$7,840</td>
<td>$4,613</td>
</tr>
<tr>
<td>Rifle</td>
<td>$3,762</td>
<td>$5,940</td>
<td>$2,178</td>
</tr>
<tr>
<td>Totals</td>
<td>$6,989</td>
<td>$13,780</td>
<td>$6,791</td>
</tr>
</tbody>
</table>

**Travel Time Savings Analysis**

An important measure that must be considered if an indoor gun range is constructed in Novi is the travel time savings that would be realized. An analysis of the amount of time an officer spends out of service (unavailable for calls for service) while conducting routine monthly firearms training at the Farmington City Range was conducted. This analysis deals with the cost savings. It is important to note there is also a regular service enhancement, in addition to the officer safety enhancement. When officers are saved this travel time, there is additional service time available for road patrol and call response. The range is made available to each officer one time per month, assuming that the range is operational.

**Range Officer Analysis**

Before making any calculations, the following factors were taken into consideration; the amount of time spent by the range officer loading and unloading equipment, travel time to/from the range and time spent instructing out of the city. The amount of time spent by each officer/detective traveling to and from the range as well as time spent training and qualifying was also analyzed. All times listed are based upon the personal experiences of current range instructors and timed calculations.

Due to the indoor gun range being located outside of the City of Novi, the department is unable to store supplies on-site. We have requested to store our equipment at the Farmington range, however storage space is a premium and
our request was denied. Unfortunately, this requires range personnel to load and unload supplies each and every time the range is opened.

This process takes on average 1.5 hours from the start of the loading at the Novi Police Department until the range is open. The entire process then must be reversed to close the range down and transport the equipment back to Novi Police Headquarters. Each time the range is opened the cost in range personnel hours is approximately three hours. On average, two officers and a range officer are taken out of service during for each training session.

**Sworn Personnel Analysis**

Each member of the department is required to travel to and from the range for each training session. An analysis of the amount of time spent in-transit was completed. Uniformed Patrol Division personnel usually start heading to the range from all areas of the city. The starting point would vary depending upon which district the officer was assigned. The police department was used as the starting point to determine the amount of travel time. Actual travel time would vary depending on the time of day, route, traffic congestion and weather conditions. Two routes were timed, both during the day and night, to determine the average time. One route utilized the M-5 expressway while the other route utilized surface streets (Nine Mile Road). For sworn personnel who are assigned to the day shift the average travel time each way was (16) minutes. For sworn personnel assigned to the night shift the average travel time each way was (11) minutes.
The table listed below illustrates the amount of time spent traveling to the range, in a (24) hour period, for our personnel. It should be noted that this does not include every sworn officer. It only includes those officers who were on duty that day. There are (26) additional officers who were off duty. This is due to the (12) hour shift rotation.

<table>
<thead>
<tr>
<th></th>
<th>Time Saved per Individual Officer</th>
<th>Total Savings per Individual Officer</th>
<th>Officers per Shift</th>
<th>Total Time Saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detectives</td>
<td>0:16</td>
<td>0:32</td>
<td>12</td>
<td>6:24</td>
</tr>
<tr>
<td>Detective Sergeant</td>
<td>0:16</td>
<td>0:32</td>
<td>1</td>
<td>0:32</td>
</tr>
<tr>
<td>Administrative (Chiefs/Lt.’s)</td>
<td>0:16</td>
<td>0:32</td>
<td>4</td>
<td>2:08</td>
</tr>
<tr>
<td>Day Shift</td>
<td>0:16</td>
<td>0:32</td>
<td>8</td>
<td>4:16</td>
</tr>
<tr>
<td>Traffic Unit</td>
<td>0:16</td>
<td>0:32</td>
<td>1</td>
<td>0:32</td>
</tr>
<tr>
<td>Day Sergeants</td>
<td>0:16</td>
<td>0:32</td>
<td>2</td>
<td>1:04</td>
</tr>
<tr>
<td>Afternoon and Night Shifts</td>
<td>0:11</td>
<td>0:22</td>
<td>12</td>
<td>4:24</td>
</tr>
<tr>
<td>Night Sergeants</td>
<td>0:11</td>
<td>0:22</td>
<td>2</td>
<td>0:44</td>
</tr>
<tr>
<td>Range Officer</td>
<td>1:15</td>
<td>1:15</td>
<td>2</td>
<td>2:30</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>44</td>
<td>22:34</td>
</tr>
</tbody>
</table>

To determine the total time spent in travel to train the entire department we would have to include the following off duty personnel: 7 Day Shift Officers, 2 Day Shift Sergeants, 1 Traffic Officer, 12 Afternoon and Night Officers, 2 Night Shift Sergeants in addition to the time spent to open and close the range.

<table>
<thead>
<tr>
<th></th>
<th>Time Saved per Individual Officer</th>
<th>Total Savings per Individual Officer</th>
<th>Officers per Shift</th>
<th>Total Time Saved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Day Shift</td>
<td>0:16</td>
<td>0:32</td>
<td>7</td>
<td>3:44</td>
</tr>
<tr>
<td>Traffic Unit</td>
<td>0:16</td>
<td>0:32</td>
<td>1</td>
<td>0:32</td>
</tr>
<tr>
<td>Day Sergeants</td>
<td>0:16</td>
<td>0:32</td>
<td>2</td>
<td>1:04</td>
</tr>
<tr>
<td>Afternoon and Night Shifts</td>
<td>0:11</td>
<td>0:22</td>
<td>12</td>
<td>4:24</td>
</tr>
<tr>
<td>Night Sergeants</td>
<td>0:11</td>
<td>0:22</td>
<td>2</td>
<td>0:44</td>
</tr>
<tr>
<td>Range Officer</td>
<td>1:15</td>
<td>1:15</td>
<td>2</td>
<td>2:30</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>26</td>
<td>12:28</td>
</tr>
</tbody>
</table>

The total time spent traveling to and from the range including opening and closing time is just over (35) hours per month. This savings represents a significant amount of time that Uniform personnel could be on preventative patrol throughout the community and other staff could be conducting their respective administrative or investigative duties.
Qualification Time

Upon arrival at the range each officer is given the opportunity to qualify using the department’s Michigan Commission on Law Enforcement Standards (MCOLES) approved course of fire. After qualifying, officers are trained in a variety of shooting disciplines. These include, but are not limited to, reloading drills, malfunction drills, multiple targets and low light conditions. On average, an officer spends one hour to complete the qualification and training. This time would vary depending upon the abilities of the shooter and the difficulty of the training session.

Firearms Training System/ Tactics/Media Room

As part of the overall plan for build out, it has been proposed to add a separate room to the current Police facility dedicated for the Firearms Training System (FATS). This room can also function as a media center and defensive tactics room. Currently the department does not have space dedicated for these activities as they have been conducted in the current Training Center.

The Training Center is also used to host training sessions, community meetings and events and also serves as Novi’s Emergency Operations Center (EOC). The use of this room has increased greatly over the past few years. By dedicating a room to function as the FATS/Tactics and Media Center, several conflicts would be avoided.

In the event the EOC is activated, there is currently not a location for the media to assemble or to be briefed. When the training center is used for tactics training, all of the tables and chairs must be removed from the room and then replaced after the session is complete. This same procedure is required whenever the FATS system is used.

The FATS is a computer based system that provides comprehensive judgment training. Utilizing a video projection system, the officer is placed in various routine law enforcement scenarios involving the possible use of force. The scenarios are typically referred to as “shoot, don’t shoot.” The amount of force needed to successfully complete the scenario can be determined by the officer’s actions and is based upon the decisions made by the officer, his/her judgment and their marksmanship.

Due to the complexity of this system and the multiple pieces of equipment, FATS setup can take between 2 – 3 hours per session. Currently staff has to spend an additional 2 – 3 hours breaking the system down and returning it to the designated storage area.
Insurance Costs

Ms. Jenny Walewski of our Human Resources Department contacted our insurance carrier, Michigan Insurance Alliance, to determine if there would be an increase in our insurance premium due to adding an indoor gun range. She was advised that if the range is constructed to acceptable building standards and passes an inspection from the insurance carrier's Risk Control Department, there would be no increase in premium.

Janitorial Service – Indoor Gun Range

Janitorial services for the range would not be necessary. The cleaning of the range would be performed by personnel who have special training and equipment to deal with the hazardous materials. The control room would only need to be swept out after each training session. Because this area is separated from the range no special training or equipment is necessary. Currently our range officers sweep the control room of the Farmington Range. It is expected that this practice would continue.

Regionalized Range Use

Use of the indoor gun range would be restricted to law enforcement personnel and others attending department sanctioned training under the supervision of a Novi range officer. Some of the ranges that were contacted rent their facility to other law enforcement agencies. Discussions have taken place with surrounding Police Departments and they have expressed some interest in utilizing a range if constructed in Novi. Costs would have to be determined and it would be imperative that a Novi range officer is present to run the range for all departments.

There are several possible advantages of constructing an indoor gun range in the City of Novi:

- Discontinued use of the Farmington pistol – a savings of $1,800 per year.
- Reduce the use of the Canton Outdoor range – a savings of $1,600 per year.
- Less preparation, set up, and takedown time by instructors. Estimated at three hours per range day.
- Increased efficiency and effectiveness of Novi Police officers – no travel time – more time on patrol in the City of Novi. Total monthly travel time savings: (35) hours
- Allows use of the range as staffing levels permit rather than when the ranges are available. Some savings of compensation time off to officers would be realized.
• Officers remain in the city and are available for **immediate**
emergency call out if necessary. Currently officers are three miles
away in Farmington.
• Improved state of the art firearms training/targeting systems.
  Variable light and situational shooting would be possible.
• New facility would incorporate storage area for equipment and
  ammunition storage.
• Ability to host special firearms classes – potential cost savings.
• Improved shooting skills will be recognized for all officers.
• Possibility of renting the range to other police departments.
• Enhanced efficiencies and adjacencies if constructed at FSC.
• Citizen concerns of noise and lead are totally abated if constructed
  at FSC.
• Decreased civil liability in the event a firearm is used.

**Estimated recurring costs and concerns:**

• Filter replacement every 18 months - $1,500.
• Complete range clean-out every 36 months – $6,400.
  (includes complete removal and proper disposal of all hazardous
  and contaminated materials).
• Increased ammunition costs – estimated at $6,791 per fiscal year
  (Farmington Range was closed 41.7% of the FY 04/05 and closed
  33.3% of the time in FY 05/06).
• Residential concerns if built at current Police Facility – these
  concerns should be totally negated by proper engineering and
  design.

**Increased Operational Costs for Police Build-Out – Janitorial Services**

An additional item that must be considered for anticipated Police facility build-out
is the increase in operational costs for janitorial services. The currently Police
facility occupies 36,300 square feet. The janitorial costs are $2,775 per month for
a total of $33,300 per year. The proposed build-out plan would expand our facility
to 53,080 square feet. The estimated cost of janitorial services is expected to be
$4,069 per month for a total of $48,843 annually. This estimate is based upon
current 2006 pricing levels.

I look forward to presenting this information in conjunction with the Wold analysis.
I hope this information will be helpful for members of City Council during their
discussion process.

Please let me know if you have any questions.
City of Novi  
Enter Federal Forfeiture Funds  
Through September 30, 2006 (and deposit of $1,161,953.52 on October 10, 2006)  

<table>
<thead>
<tr>
<th></th>
<th>For the Year Ended</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>June 30, 2005</td>
</tr>
<tr>
<td>Federal Forfeiture Funds Received</td>
<td>$1,332,410</td>
</tr>
<tr>
<td>Interest Income</td>
<td>6,656</td>
</tr>
<tr>
<td><strong>Total Revenue</strong></td>
<td><strong>1,339,066</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Expenditures</th>
<th><strong>Budget</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>General Fund Reimbursement: Overtime and other costs associated with a drug investigation</td>
<td>$90,000</td>
</tr>
<tr>
<td>Two additional uniformed patrol officers (first year costs)</td>
<td>-</td>
</tr>
<tr>
<td>Vehicles (9 patrol vehicles 2005-6 and 6 patrol; 2 unmarked 2006-7) ($227,970 and $184,564, respectively)</td>
<td>-</td>
</tr>
<tr>
<td>Communications Equipment - Dispatch Center</td>
<td>-</td>
</tr>
<tr>
<td>- 800 MHz Radio Conversion: Replace the existing control head and siren system with one that will operate independent of the radio</td>
<td>-</td>
</tr>
<tr>
<td>- Radio Consoles</td>
<td>-</td>
</tr>
<tr>
<td>- Un-Interruptible Power Supply</td>
<td>-</td>
</tr>
<tr>
<td>- Communications Recording System</td>
<td>-</td>
</tr>
<tr>
<td>- Fourth Dispatch Console</td>
<td>-</td>
</tr>
<tr>
<td>Integrated Financial Management System: Proportional share of the Police Department.</td>
<td>-</td>
</tr>
<tr>
<td>Firearms Range: Add a firearms range to the Civic Center/Police building complex. The range would be a fully enclosed building addition most likely added at the south end of the Police Training Center. (Recommended $2,000,000; Authorized $1,000,000)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total Expenditures</strong></td>
<td><strong>3,097,970</strong></td>
</tr>
<tr>
<td><strong>Excess of Revenue over Expenditures</strong></td>
<td><strong>$1,339,066</strong></td>
</tr>
<tr>
<td><strong>Balance Available for City Council Appropriation</strong></td>
<td><strong>$2,644,808</strong></td>
</tr>
</tbody>
</table>
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Executive Summary

Introduction

Wold Architects and Engineers is pleased to submit to the City of Novi the Police Department Indoor Gun Range & Training Facility Assessment Analysis with Master Plan for Novi Police Department at Community Build-out.

We wish to thank the City of Novi Administration, City Council Members, Police Chief and Staff, and the Core Planning Group for their exhaustive efforts in providing the Design Team with the information necessary to advance to this stage of development in a timely fashion.

Core Planning Group:

Chief David Molloy
Deputy Chief Thomas Lindberg
Det. Jerrod Hart, Investigations
Clerk Cyndee Hayes, Records
Shift Leader Karen Jackson, Dispatch
Lt. Victor Lauria, Investigations and Records
Ofc. Tom Orlowski, Uniform Patrol
James Petres, Analyst Planner
Sgt. Michael Warren, Uniform Patrol
Lt. Keith Wuotinen, Uniform Patrol and Vehicle Maintenance

Tim Schmitt, Planner
Sheryl Walsh, Community Relations Manager

Thank you for your consideration of this Indoor Gun Range and Training Facility Assessment Analysis with Master Plan for Novi Police Department at Community Build-out.
Recommendations of the Core Planning Group

An Indoor Gun Range and Training Facility Assessment with a Master Plan for the Novi Police Department facility needs at community build out has been conducted to meet anticipated future city growth and to determine if the current police facility should be expanded.

The Core Planning Group has convened and met twelve times. They have studied issues and requirements relative to the mission of the city and the Police Facility and have developed the following recommendations.

Overview and Need for Planning

Before moving into specific elements of an expanded training center and building an indoor gun range, the Core Planning Group established guiding principles for facility planning so the police facility could be planned and examined in its entirety to meet the City of Novi’s anticipated build-out. It was determined early that simply looking at the training facility and indoor gun range, without anticipating other inevitable needs, would mean the City could be building additions and features now that are not part of an entire vision. Without vision, complimentary adjacency and economics of scale are missed and future conflicting spaces are more likely.

- Novi, today, is a diverse residential/retail/office hub with generally higher than average income, home values and education. The City today is fortunate to have below average crime rates and calls for service. Considering a projected ultimate Novi build-out population of approximately 68,059 people, approximately 54,620 SF will be ultimately needed to accomplish the facility’s functional objectives for patrol, investigations, dispatch, training, gun range, evidence and processing, records, administration and drug education center. Currently, there is approximately 36,300 SF in the existing police facility. Space calculations are the result of detailed description of space needs which was tabulated by Wold and is described in the space summary section of this report. The Core Planning Group recognizes the need to provide adequate spaces for police functions which currently have deficiencies in training, locker amenities, circulation flow of patrol functions, conference and interview rooms, and vehicle sallyports and storage.

- Police vehicles are currently parked in the existing east parking lot. This parking lot accommodates today’s parking needs with 100 parking spaces. Thirty-four (34) of the spaces are for department vehicles and (67) spaces are dedicated to employee parking. Currently the department has a fleet of nearly (40) vehicles and that number is expected to grow consistent with the growth of the department. However, with the projected increased number of sworn officers and civilian staff for the year 2024; this parking lot will require expansion. The recommendation is to provide for an additional 60-stall parking lot addition at full build out.
Site Recommendations

The existing facility covers approximately 2.5 acres and is part of the overall civic center campus located in the center of the Novi community. The police facility will likely require 3.5 acres when the parking requirements are considered.

- Site studies conclude that the current parcel of land will be able to accommodate for the full build out requirements of the police facility and east parking lot expansion objectives with or without the indoor gun range at this particular location; including not infringing on property for park space.

- If the indoor gun range is constructed as an expansion south of the existing police facility, the existing topographical grades of the site offer a natural berm which allows for the indoor gun range addition to be carved into. The bermed earth mass against the exterior gun range walls provides a cost effective and environmentally friendly sound attenuation opportunity.
Recommendations and Conclusions

The Core Planning Group recommends a full build-out Option I on the existing site to meet the long-term needs of the City as described in the project Guiding Principles. It is imperative to provide a facility that can readily meet the requirements of today and the future. The costs and details are described for the full build-out option on the following page. An Option I build-out would provide for enhanced efficiencies and adjacencies throughout the police facility and would also afford additional storage and conference space that is desperately lacking in the current facility. In addition, by having an indoor gun range located within the city, officers would be on preventative patrol dozens more hours per range qualification day, thus providing for a more effective level of police service with enhanced police coverage of the community.

Phasing Options

Should the City require a phased approach to reduce initial costs, the Core Planning Group recommends completing an initial phase of the Improvement Plan with the following objectives.

- To reduce initial costs
- The basic needs pertaining to renovation and expansion should be incorporated within the initial phase in order to maintain an operationally sound facility.
- Phasing should not compromise functionality. Conceptually, an initial phase of the Improvement Plan provides core functional needs to be addressed followed by a later phase of the Improvement Plan that addresses the remaining needs and prepares the facility for growth.
- The Core Planning Group has prioritized functional needs and concluded three options be developed:
  - **Option I** would incorporate all functional improvements and expand the facility to accommodate current and future space needs at the current police department site, with the eight-lane indoor gun range constructed at the Field Services Complex site.
  - **Option II** is same as Option I except the eight-lane indoor gun range is included and constructed at the current Police facility site.
  - **Option III** is same as Option I except the Indoor Gun Range is eliminated.

Physical security has been reviewed and properly addressed in all of the options set forth by the Core Planning Group. If Option I is selected and the indoor gun range is constructed at the Field Services Complex site, this would allow both departments (Police and Field Services Complex) to improve adjacency and efficiencies by having shared office space and male/female restroom facilities.
Recommended Facility Detail

Full Build-Out Option

Should the City afford renovations and a full build out option, the following is recommended:

- **Option I – Complete Renovations and Full Build-Out at Police Headquarters – Indoor gun range at the FSC site**
  - 11,486 SF of police program renovations.
  - 11,442 of police program additions.
  - 6740 SF of police program additions.
  - 60 vehicle stall addition to the east parking lot.

  Renovations and Full Build-Out
  - Construction Cost of $3,864,850
  - Total Project Cost of $4,946,050

  Indoor Gun Range at FSC Site
  - Construction Cost of $1,347,500
  - Total Project Cost of $1,725,300 (does not include FSC) *

Alternate Options

Should the City require an alternate approach to provide for full build-out, then the following options offer an alternate siting for the Indoor Gun Range and an alternate scope eliminating the Indoor Gun Range:

- **Option II – Complete Renovations and Full Build-Out at Police Headquarters – Indoor gun range at the Police site**
  - 11,486 SF of police program renovations.
  - 16,780 SF of police program additions.
  - 60 vehicle stall addition to the east parking lot.
  - Construction cost of $ 4,935,950
  - Total project cost of $ 6,266,950

*There are several significant factors influencing the project cost difference between Option I and Option II. First, for cost estimating purposes, the Indoor Gun Range placement at the Field Services Complex site is assumed to be a “stand alone” project independent of potential improvements to the Field Services Complex. Therefore, site development is required to achieve access and parking at this location. Secondly, as a “stand alone” facility some construction efficiencies are scarified when compared to the Option II approach of locating all improvements at the Police Department site. Lastly, the most significant difference is attributed to the cost of providing the infrastructure for a future storage mezzanine about the Indoor Gun Range. This mezzanine would be accessible from the future Field Services Complex expansion. The size of the Indoor Gun Range expands to accommodate mechanical system equipment space without competing with a future mezzanine. If the storage mezzanine preparation is not implemented at the Indoor Gun Range the project cost would decrease by approximately $191,000.
Recommended Facility Details (Con’t)

- Option III – Complete Renovations and Full Build-Out at Police Headquarters - without indoor gun range.
  11,486 SF of police program renovations.
  11,442 SF of police program additions.
  60 vehicle stall addition to the east parking lot.
  Construction cost of $3,864,850
  Total project cost of $4,946,050

The Core Planning Group looks forward to commencing the next steps in the planning process.

Note:

Costs are for 2006. If construction occurs at a later date, add 5% per year inflation.
Study Methodology

To arrive at the following conclusions, extensive meetings and discussions occurred between the Wold team, the Core Planning Group and Novi Police Staff. This effort included staff interviews, information gatherings, community forum, current facility assessment, and future growth (short and long term) studies.

Along with the above methodology, the core planning group participated in extensive tours which occurred at the following facilities:

- Dearborn Heights Police Department
- Farmington Gun Range
- Novi Middle School Auditorium
- Troy Police Department
- Waterford Police Department

The following goals for the study were outlined early in the process:

Step 1
Meeting 1 – Current and Future Operations
- Guiding Principles developed
- Current operations discussed
- Future Operational opportunities explored
- Growth and diversity projections discussed
- Initiate site conditions analysis

Meeting 2 – Growth Needs Analysis
- Projections approved
- Space deficiencies explored
- Current and future needs approved explored

Step 2
Meeting 3 – Facility
- Current utilization and capacities discussed
- Facility deficiencies/opportunities explored

Meeting 4 – Program
- Confirm program of spaces
- Develop future operational models explored

Step 3
Meeting 5 – Options
- Evaluate existing/new options
- Cost scenario review
- Options selection and strategy
Meeting 6 – Public Information Meeting: June 28, 2006
  • Open communication
  • Dialogue
  • Exchange of information
  • At Police Headquarters

Meeting 7 – Preferred Options
  • Respond to feedback
  • Develop option and cost
  • Develop phasing strategy
  • Develop implementation process

Meeting 8 – Report
  • Respond to feedback
  • Refine option and cost
  • Refine phasing strategy
  • Develop report
Guiding Principles and Strategies for Implementation

Guiding Principles and strategies for implementation were developed during Core Planning Group meetings in order to define the role, image and mission of the Police facility functions for the City.

1. Anticipate the needs of the City, the building needs to consider for the long-term build-out of the City.
   - Sensible growth – not shortsighted.
   - Serving a growing community.

2. A facility the department and the citizens are proud of.
   - Not opulent
   - Efficient and easily maintained.

3. Providing a welcoming environment, a safe haven for all.
   - No barriers – easily accessible.

4. A facility that offers protection for citizens and the community; not intimidating.
   - Inviting the community to interact.

5. A facility that can bridge the officers with the community.
   - An environment promoting collaboration with the residents.

6. Building to incorporate durable, high quality materials with attention to detail.
   - Low maintenance and cost efficient

7. Technologically advanced; state of the art.
   - Maximize safety and security.
   - Create efficiency and flow.

8. Fiscally responsible, not opulent or overbuilt.
   - Appropriate image.
   - Cost effective materials.

9. A facility that can promote community events, volunteerism, spirit of involvement.
   - Spaces which are available.
   - Flexible environments.

10. Striving for excellence by continuous improvement.
    - Match facility to high service commitment.

11. The Golden Rule - Treat others as you want to be treated.
Current and Future Operations

Current and Future Population Projections for the City of Novi

Estimated Population in 2006
- Approximately 54,423 *

Projected Population at 2024
- Approximately 68,059 **

Current and Future Projections for Total Police Staff

Model population ratios of police staff per citizens
- 1.70 per 1000 citizens ***
- .5 civilian staff per 1000 citizens

Estimated Population in 2006 – 54,423 residents
- 70 sworn officers Ratio of officers per 1000 citizens = 1.29
- 29 civilian staff Ratio of civilian staff per 1000 citizens = .533

Population at 2024 – 68,059 residents
- 1.50 x 68,059 = 102 sworn officers ****
- .5 x 68,059 = 34 civilian staff

Note:

* 2006 population estimate was obtained from the Novi Planning Department staff. Refer to Appendix II.

** 2024 population estimate is based on information from the Novi Planning Department staff. Refer to Appendix II.

*** According to the FBI’s 2005 Uniform Crime Report, the average ratio for police departments in the East North Central portion of the Midwest is 1.7. Refer to Appendix II.

**** Increase in population from 2019-2024 is based on Planning Department projections of minimal growth per year. Refer to Appendix II.
Current Facility Analysis - 2006

The following documentation identifies physical deficiencies of the current facility as observed during on-site analysis and as recorded from building occupants’ input. (Refer to Appendix III for representative photos.)

Site

- The west parking lot and drop off loop was addressed in the 2001 renovations and addition and is in good condition.
- The east patrol parking lot experiences ponding in the southeast corner of the lot. All other areas of the lot are considered to be in good condition.
- The exterior stoop outside of the Mechanical Room door retains water due to the location of the existing drain and pitch of the concrete. Retention of water in this area has created moisture damage in the adjacent brick walls.
- The security fencing is in good condition.

Exterior

- The brick veneer is in good condition and needs no repair.
- The upper level windows are experiencing leaking and condensation due to failed gaskets throughout. Due to this condition, the window soffits are failing and need repairing.
- The Boiler Room exterior door threshold curb prohibits transporting equipment through that opening.
- The roof on the 1980 portion of the building is in good condition and needs no repair.
- The roof on the 2000 portion of the building is in good condition and needs no repair. An existing manufacturer’s warranty should still be applicable to this roof area.

Interior

- The interior finishes are in good condition and well maintained.
- The casework throughout the facility is in good condition, however, the casework in the sergeants office could allow for more efficient storage with the addition of filing drawers under the existing countertop along with modifications to the upper wall hung cabinets.
- The structural system of the 1980 portion of the building is a combination of steel beam and joist system and load bearing block walls with steel joists.
- The holding cell area is load bearing block walls with concrete plank deck system. The 2000 addition consists of load bearing block walls with steel joists.
Accessibility

- The public toilet rooms off the main entrance lobby and the training room are accessible. An accessible toilet room is also located on the upper level.

- Doors that were added or modified during the 2000 renovations have accessible lever hardware. All other doors have non-accessible knob hardware.

- No clearance issues at doors or in hallways were observed.

- Automatic opening hardware at the main entrance allows for accessibility required by current codes.

Hazardous Materials

- Given the building’s original construction time frame (1987), asbestos containing materials are unlikely, no evidence of asbestos containing materials was noted.

Life Safety

- The fire alarm system is a National Time and Signal Corp. Series #7000 Fire Alarm Control Panel system with the main panel located in the main electrical room. The system was installed in the year 2000 and the entire structure was upgraded with new horn/strobes. The system can accommodate new life safety devices for a gun range addition, but beyond that an additional panel will be needed for new devices.

- The LED type exit signs were installed with the lighting replacement in 2000 and are on the emergency generator. The exit signs appear to be in good shape, and the coverage is up to code.

- There is a separate wet system fire protection service entrance in the boiler room. The boiler room is sprinkled.

Mechanical Systems

- The building is served by two Bryan flex tube boilers. One is original (1979) the other is newer (2000). Each is approximately 3500 MBH. The maintenance staff reports that one boiler is capable of handling the full building load. A boiler control panel operates the boilers as lead/lag and automatically rotates the lead boiler. The boiler plant appears to have adequate capacity for proposed new areas with the exception of the gun range. Gun ranges are typically 100% outside air / exhaust which would be a gas fired heating system. Boiler and water heater flues are connected and exit through a common stack.

- The existing combustion air opening is sized only to allow a single boiler to fire at a time. If an increase in building load is anticipated such that both boilers need to run, then the combustion air opening will need to be upsized.
• The 1998 renovation project replaced the existing air cooled chiller with a new 80 ton chiller. Chilled water is distributed throughout the building. Maintenance staff reports that it is adequately sized for current building load. A detailed analysis needs to be performed to determine if any additional load will be required with any future new additions or systems.

• The building system is managed by pneumatic controls. The maintenance staff reports that there are temperature control issues throughout the building. Re-commissioning, calibrating, and repair or replacement of the existing pneumatic system components may improve system operation. We would recommend evaluating the building based on current use to rebalance the air systems. It may be recommended that this system be replaced by a digital system to help update the system and further improve temperature issues throughout the building. There is a new air compressor that serves the pneumatic control system. This air compressor could be relocated to the garage to be put into use there if the control system is upgraded.

• The main core of the building is served by two variable volume Air Handling Units in a basement mechanical room. Variable air volume boxes with hot water reheat provide individual heating and cooling zone control throughout the building. Both Air Handling Units are original and are nearing the end of their useful life. Replacement of unit components including dampers, motors, and valves would extend unit life and improve operation. All other areas including dispatch, cells, briefing room, and training center have their own dedicated systems that are up to date.

• The domestic hot water system is served by a Lochinvar water heater. Building maintenance stated that certain rooms upstairs barely get hot water. A detailed study of the hot water system and pipe sizing should be performed. Solutions may include upsizing the re-circulation pump, upsizing piping, extending re-circulation piping, and/or re-balancing the re-circulation system.

• Maintenance staff reports that the training room has temperature control issues and has been in the habit of leaving exterior doors open to improve ventilation. Re-balancing and recalibration of control systems should improve operation. The room occupancy varies greatly. At a given time, the room may host from a small group of people all the way up to 75-80 people. A carbon monoxide sensor could be considered for managing the outside air flow and energy costs associated. In addition, supplemental cooling can be provided to help during larger room load times.

• The maintenance staff noted that the cell areas are very cold in the winter. Options to resolve cold complaints can be reviewed and may include increasing Air Handling Unit heating capacity, providing radiant heat panels, or provide fin tube radiation.

• Many of the exhaust fans throughout the building are original, and not working. Repair or replacement to return the systems to their original design intent would improve ventilation throughout the building.

• The garage exhaust and ventilation appear to be in good working condition.
Electrical Systems

- The main electrical service comes in underground from the main pad-mounted transformer and enters a main 800A, 480V, 3 phase Gould ITE switchboard located in the main electrical room. This switchboard feeds all the panels in the building and appears to be in fair condition, however, Gould has sold ITE to ABB and finding replacement parts may be difficult. There are (2) – 100A spaces and (1) – 100A spare in the existing switchboard. These spaces and spares are likely not enough to accommodate proposed renovations and expansions at the Police Department. A new service will need to be provided.

- The only power issues reported in the building were with the use of space heaters. Dedicated receptacles should be run to areas where space heaters will be used.

- The existing Kohler generator and associated panels have some capacity remaining. A new generator and panels will be needed to accommodate the renovation, expansion and department needs at the Police Department.

- The light fixtures in the existing building were replaced in 2000 and appear to be in good shape.

- The existing building doesn't have a masterclock system. A masterclock system should be considered and tied into the data server to ensure the clocks stay synchronized with building computer systems.

- Technology increase from category 3 voice and category 5 for data to category 6 throughout Police Headquarters.
Option 1:
Complete Renovations and Full Build-Out-
Indoor Gun Range at the F.S.C. Facility Site
Diagram

Click here to view the above Diagram
Option 1:
Complete Renovations and Full Build-Out-Indoor Gun Range at the F.S.C. Facility Site
Aerial Photo

Click here to view the above Photo
Option 2:
Complete Renovations and Full Build-Out-
Indoor Gun Range at the Police Facility Site
Aerial Photo

Click here to view the above Photo
Option 3:
Complete Renovations and Full Build-Out-
Without Indoor Gun Range
Aerial Photo

Click here to view the above Photo
Options Development Program

Option I – Complete Renovations and Full Build–Out,
Indoor Gun Range at the FSC site

Reuse existing 36,300 S.F. building with the following potential functions:

<table>
<thead>
<tr>
<th>Function</th>
<th>SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holding Cells</td>
<td>4,203</td>
</tr>
<tr>
<td>Evidence</td>
<td>999</td>
</tr>
<tr>
<td>Dispatch</td>
<td>1,147</td>
</tr>
<tr>
<td>Support Services</td>
<td>636</td>
</tr>
<tr>
<td>Lobby</td>
<td>759</td>
</tr>
<tr>
<td>Uniform Division</td>
<td>3,209</td>
</tr>
<tr>
<td>Fleet Maintenance</td>
<td>2,197</td>
</tr>
<tr>
<td>Training</td>
<td>2,322</td>
</tr>
<tr>
<td>Administration</td>
<td>3,106</td>
</tr>
<tr>
<td>Records</td>
<td>1,445</td>
</tr>
<tr>
<td>Investigations</td>
<td>3,850</td>
</tr>
<tr>
<td>Building Services</td>
<td>1,433</td>
</tr>
</tbody>
</table>

Subtotal 25,306 Net SF
Net to gross factor 1.43

Total 36,300 Gross SF

Expansion area added as required per program:

<table>
<thead>
<tr>
<th>Function</th>
<th>SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evidence Processing</td>
<td>1,615</td>
</tr>
<tr>
<td>Support Services</td>
<td>4,109</td>
</tr>
<tr>
<td>Training</td>
<td>2,903</td>
</tr>
<tr>
<td>Building Services</td>
<td>1,119</td>
</tr>
</tbody>
</table>

Subtotal 9,746 Net SF
Net to gross factor 1.17

Total 11,442 Gross SF

Construction of the Indoor Gun Range at the FSC facility site:

<table>
<thead>
<tr>
<th>Function</th>
<th>SF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indoor Gun Range</td>
<td>5,108</td>
</tr>
</tbody>
</table>

Subtotal 5,108 Net SF
Net to Gross Factor 1.32

Total 6,740 Gross SF

Note:
Refer to the Spatial Summary included in the "Facility Needs Master Plan" report dated October 23, 2006 for the allocated square footage requirements of the indoor gun range located at the FSC site.
Option I - Complete Renovations and Full Build-Out
Indoor Gun Range at the FSC Site
Preliminary Cost Summary

Construction Costs (Renovations and Expansions)  

<table>
<thead>
<tr>
<th>Sq. Footage</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Development</td>
<td>18,000</td>
</tr>
<tr>
<td>Building Construction</td>
<td></td>
</tr>
<tr>
<td>Critical Needs</td>
<td>NA</td>
</tr>
<tr>
<td>Renovation</td>
<td>11,486</td>
</tr>
<tr>
<td>Building Expansion</td>
<td>11,442</td>
</tr>
</tbody>
</table>

Construction Cost Subtotal  

$ 3,864,850.00

Fees and Testing  

$ 386,000.00

Furniture/Equipment  

$ 309,200.00

Contingency  

$ 386,000.00

TOTAL PROJECT COST  

$ 4,946,050.00

The following preliminary cost summary reflects construction of the Indoor Gun Range at the Field Services Complex Site. Additional site costs are represented to track potential costs which will be incurred if the Field Services Complex Site is not developed concurrently with the Indoor Gun Range.

Construction Costs (Indoor Gun Range)  

<table>
<thead>
<tr>
<th>Sq. Footage</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Development</td>
<td>21,000</td>
</tr>
<tr>
<td>Building Construction</td>
<td>6,740</td>
</tr>
</tbody>
</table>

Construction Cost Subtotal  

$ 1,347,500.00

Fees and Testing  

$ 135,000.00

Furniture/Equipment  

$ 107,800.00

Contingency  

$ 135,000.00

TOTAL PROJECT COST  

$ 1,725,300.00

Project Cost For Option I  

Police Department Facility Improvements  

$ 4,946,050.00

Indoor Gun Range at the FSC Facility Site  

$ 1,725,300.00

TOTAL PROJECT COST FOR OPTION I  

$ 6,671,350.00

Note:
1. Costs are for 2006. If construction occurs at a later time, add 5% per year for inflation.
Options Development Program

Option II – Complete Renovations and Full Build–Out
Indoor Gun Range at the Police Facility site

Reuse existing 36,300 S.F. building with the following potential functions:

- Holding Cells: 4,203 SF
- Evidence: 999 SF
- Dispatch: 1,147 SF
- Support Services: 636 SF
- Lobby: 759 SF
- Uniform Division: 3,209 SF
- Fleet Maintenance: 2,197 SF
- Training: 2,322 SF
- Administration: 3,106 SF
- Records: 1,445 SF
- Investigations: 3,850 SF
- Building Services: 1,433 SF

Subtotal 25,306 Net SF
Net to gross factor 1.43
Total 36,300 Gross SF

Expansion area added as required per program:

- Evidence Processing: 1,615 SF
- Support Services: 4,109 SF
- Training: 2,903 SF
- Building Services: 1,119 SF
- Indoor Gun Range: 5,108 SF

Subtotal 14,854 Net SF
Net to gross factor 1.13
Total 16,780 Gross SF
### Option II - Complete Renovations and Full Partial Build-Out

**Indoor Gun Range at the FSC Site**

**Preliminary Cost Summary**

<table>
<thead>
<tr>
<th>Construction Costs</th>
<th>Sq. Footage</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Development</td>
<td>18,000</td>
<td>$ 216,000</td>
</tr>
<tr>
<td>Building Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical Needs</td>
<td>NA</td>
<td>$ 432,450</td>
</tr>
<tr>
<td>Renovation</td>
<td>11,486</td>
<td>$ 1,129,000</td>
</tr>
<tr>
<td>Building Expansion</td>
<td>16,780</td>
<td>$ 3,158,500</td>
</tr>
</tbody>
</table>

**Construction Cost Subtotal**

$ 4,935,950

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Fees and Testing</td>
<td>$ 493,000</td>
<td></td>
</tr>
<tr>
<td>Furniture/Equipment</td>
<td>$ 345,000</td>
<td></td>
</tr>
<tr>
<td>Contingency</td>
<td>$ 493,000</td>
<td></td>
</tr>
</tbody>
</table>

**TOTAL PROJECT COST**

$ 6,266,950

Note:

1. Costs are for 2006. If construction occurs at a later time, add 5% per year for inflation.
Options Development Program

Option III – Complete Renovations and Full Build–Out, Without Indoor Gun Range

Reuse existing 36,300 S.F. building with the following potential functions:

- Holding Cells: 4,203 SF
- Evidence: 999 SF
- Dispatch: 1,147 SF
- Support Services: 636 SF
- Lobby: 759 SF
- Uniform Division: 3,209 SF
- Fleet Maintenance: 2,197 SF
- Training: 2,322 SF
- Administration: 3,106 SF
- Records: 1,445 SF
- Investigations: 3,850 SF
- Building Services: 1,433 SF

Subtotal: 25,306 Net SF
Net to gross factor: 1.43
Total: 36,300 Gross SF

Expansion area added as required per program:

- Evidence Processing: 1,615 SF
- Support Services: 4,109 SF
- Training: 2,903 SF
- Building Services: 1,119 SF

Subtotal: 9,746 Net SF
Net to gross factor: 1.17
Total: 11,442 Gross SF
### Option III - Complete Renovations and Full Build-Out

without Indoor Gun Range

Preliminary Cost Summary

<table>
<thead>
<tr>
<th>Construction Costs</th>
<th>Sq. Footage</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site Development</td>
<td>18,000</td>
<td>$216,000</td>
</tr>
<tr>
<td>Building Construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical Needs</td>
<td>NA</td>
<td>$432,450</td>
</tr>
<tr>
<td>Renovation</td>
<td>9,775</td>
<td>$1,129,000</td>
</tr>
<tr>
<td>Building Expansion</td>
<td>11,442</td>
<td>$2,087,400</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>$3,864,850</strong></td>
</tr>
</tbody>
</table>

| Construction Cost Subtotal |       |
|                           | $3,864,850 |

| Fees and Testing   | $386,000 |
| Furniture/Equipment| $309,000 |
| Contingency        | $386,000 |

| **TOTAL PROJECT COST** | $4,945,850 |

Note:

1. Costs are for 2006. If construction occurs at a later time, add 5% per year for inflation.
## Critical Needs Assessment
### Preliminary Cost Summary

### Construction Costs

<table>
<thead>
<tr>
<th>Architectural</th>
<th>Unit Cost</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior drainage at lower level of Mechanical Room</td>
<td>$4,800</td>
<td>$4,800</td>
</tr>
<tr>
<td>Boiler Room Door Curb</td>
<td>$6,200</td>
<td>$6,200</td>
</tr>
<tr>
<td>Window Replacements at Upper Level</td>
<td>$83,200</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mechanical</th>
<th>Unit Cost</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Replace all existing exhaust fans</td>
<td>$1,800 ea. x 12</td>
<td>$21,600</td>
</tr>
<tr>
<td>Replace 2 main Air Handling Units dampers and valves and address vibration issues.</td>
<td>$22,000</td>
<td>$22,000</td>
</tr>
<tr>
<td>Re-balance all air &amp; water systems</td>
<td>$10,500</td>
<td></td>
</tr>
<tr>
<td>Provide supplemental cooling for training area</td>
<td>$15,000</td>
<td>$15,000</td>
</tr>
<tr>
<td>Clean existing duct system</td>
<td>$20,000</td>
<td>$20,000</td>
</tr>
<tr>
<td>Upgrade domestic Hot Water re-circulation system</td>
<td>$20,000</td>
<td>$20,000</td>
</tr>
<tr>
<td>Increase holding cell heating capacity</td>
<td>Not included</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electrical</th>
<th>Unit Cost</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upgrade generator system and separate life safety devices from non-life safety devices</td>
<td>$87,500</td>
<td></td>
</tr>
<tr>
<td>Install occupancy light for restroom</td>
<td>$650</td>
<td></td>
</tr>
<tr>
<td>Replace new speaker control in records room</td>
<td>$250</td>
<td></td>
</tr>
<tr>
<td>Install light in Records Room closet</td>
<td>$750</td>
<td></td>
</tr>
</tbody>
</table>
### Critical Needs Assessment
#### Preliminary Cost Summary

<table>
<thead>
<tr>
<th>Construction Costs</th>
<th>Unit Cost</th>
<th>Budget</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Construction Cost Subtotal</strong></td>
<td></td>
<td>$432,450</td>
</tr>
<tr>
<td>Construction Cost Subtotal</td>
<td></td>
<td>$432,450</td>
</tr>
<tr>
<td>Fees and Testing</td>
<td>$</td>
<td>43,300</td>
</tr>
<tr>
<td>Contingency</td>
<td>$</td>
<td>43,300</td>
</tr>
<tr>
<td><strong>TOTAL PROJECT COST</strong></td>
<td></td>
<td>$519,050</td>
</tr>
</tbody>
</table>

**Note:**
1. Costs are for 2006. If construction occurs at a later time, add 5% per year for inflation.
### Appendix II – Projected Ratio Chart

**Projected Ratio of Officers per 1000 Citizens**  
**Two (2) Additional Officers per Year**

<table>
<thead>
<tr>
<th>Year</th>
<th>Additional Authorized Positions</th>
<th>Authorized Sworn Positions</th>
<th>Projected Population</th>
<th>Projected Population Growth</th>
<th>Ratio of Officers per 1000 Citizens</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>0</td>
<td>70</td>
<td>54423</td>
<td>N/A</td>
<td>1.29</td>
</tr>
<tr>
<td>2007</td>
<td>2</td>
<td>72</td>
<td>56255</td>
<td>3.26%</td>
<td>1.28</td>
</tr>
<tr>
<td>2008</td>
<td>2</td>
<td>74</td>
<td>57257</td>
<td>1.75%</td>
<td>1.29</td>
</tr>
<tr>
<td>2009</td>
<td>2</td>
<td>76</td>
<td>58431</td>
<td>2.01%</td>
<td>1.30</td>
</tr>
<tr>
<td>2010</td>
<td>2</td>
<td>78</td>
<td>59526</td>
<td>1.84%</td>
<td>1.31</td>
</tr>
<tr>
<td>2011</td>
<td>2</td>
<td>80</td>
<td>60764</td>
<td>2.04%</td>
<td>1.32</td>
</tr>
<tr>
<td>2012</td>
<td>2</td>
<td>82</td>
<td>61959</td>
<td>1.93%</td>
<td>1.32</td>
</tr>
<tr>
<td>2013</td>
<td>2</td>
<td>84</td>
<td>63154</td>
<td>1.89%</td>
<td>1.33</td>
</tr>
<tr>
<td>2014</td>
<td>2</td>
<td>86</td>
<td>63808</td>
<td>1.02%</td>
<td>1.35</td>
</tr>
<tr>
<td>2015</td>
<td>2</td>
<td>88</td>
<td>64462</td>
<td>1.01%</td>
<td>1.37</td>
</tr>
<tr>
<td>2016</td>
<td>2</td>
<td>90</td>
<td>65116</td>
<td>1.00%</td>
<td>1.38</td>
</tr>
<tr>
<td>2017</td>
<td>2</td>
<td>92</td>
<td>65770</td>
<td>0.99%</td>
<td>1.40</td>
</tr>
<tr>
<td>2018</td>
<td>2</td>
<td>94</td>
<td>66097</td>
<td>0.49%</td>
<td>1.42</td>
</tr>
<tr>
<td>2019</td>
<td>2</td>
<td>96</td>
<td>66424</td>
<td>0.49%</td>
<td>1.45</td>
</tr>
<tr>
<td>2020</td>
<td>2</td>
<td>98</td>
<td>66751</td>
<td>0.49%</td>
<td>1.47</td>
</tr>
<tr>
<td>2021</td>
<td>2</td>
<td>100</td>
<td>67078</td>
<td>0.49%</td>
<td>1.49</td>
</tr>
<tr>
<td>2022</td>
<td>2</td>
<td>102</td>
<td>67405</td>
<td>0.49%</td>
<td>1.51</td>
</tr>
<tr>
<td>2023</td>
<td>0</td>
<td>102</td>
<td>67732</td>
<td>0.48%</td>
<td>1.51</td>
</tr>
<tr>
<td>2024</td>
<td>0</td>
<td>102</td>
<td>68059</td>
<td>0.48%</td>
<td>1.50</td>
</tr>
</tbody>
</table>

*Population estimates provided by the City of Novi Planning Department*

*According to the FBI's 2005 Uniform Crime Report, the average ratio for police departments in the Midwest is 1.6*

*According to the FBI's 2005 Uniform Crime Report, the average ratio for police departments in the East North Central portion of the Midwest is 1.7*