



**Audit of City of Milwaukee
Investment Revenue Estimation**

W. MARTIN MORICS
City Comptroller
City of Milwaukee, Wisconsin

April, 2001

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Office of the Comptroller

April, 2001

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To the Honorable
the Common Council
City of Milwaukee

Dear Council Members:

The attached report summarizes the results of our Audit of City of Milwaukee Investment Revenue Estimation. The objectives of this audit were to evaluate the methodology used to forecast Investment Revenue for the annual City budget and to identify possible enhancements to the process. The scope of the audit focused on the process used to estimate Investment Revenue. Investment Revenue estimates are made by the Office of the Comptroller based on an estimate and information provided by the City Treasurer's Office.

The audit concludes that the current methods used to estimate interest rates are generally adequate. The audit further concludes that it is possible to significantly refine and enhance projections of investable balance. The audit recommends that the current Investment Revenue estimation process be expanded based on FMIS fund specific balance information. The audit recommends a six step approach involving the analysis of historic cash balances in major funds and fund groups and the projection of those balances over the budget year.

Audit findings and recommendations are discussed in the Audit Conclusions and Recommendations section of the report, which is followed by the Office of the City Treasurer response.

Appreciation is expressed for the cooperation extended to the auditors by the staff of the Office of the City Treasurer.

Very truly yours,

W. MARTIN MORICS
Comptroller

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

The objectives of this audit were to evaluate the methodology used to forecast Investment revenue for the annual City budget and to identify possible enhancements to the process.

Cash not needed to pay current City obligations is temporarily invested to earn interest. Under the City Charter, the Office of the Comptroller provides estimates of all City revenues for the annual City budget. Since the City Treasurer is responsible for the temporary investment of City funds, the Office of the City Treasurer provides the initial estimate of Investment Revenue to the Comptroller. The Office of the Comptroller reviews this estimate and makes a final estimate for inclusion in the budget. The Treasurer's Investment Revenue estimation methodology consists of two steps: 1) an estimate of the average investment interest rate for the year; 2) an estimate of the average investable balance for the year.

The audit disclosed that the City's estimates of Investment Revenue have often varied substantially from actual Investment Revenue realized. The average variance between actual and estimated Investment Revenue for the years 1991 through 1999 was over 23%. These differences have been primarily the result of variances between actual and estimated investable balances, particularly in recent years. Investable balance variances were responsible for 72% of the total absolute variance from 1996 through 1999.

The audit concludes that the current methods used to estimate interest rates are generally adequate. The audit further concludes that it is possible to significantly refine and enhance projections of investable balance.

The audit recommends that the current Investment Revenue estimation process be expanded based on FMIS fund specific balance information. The audit has identified six major funds and fund groups whose Equity in Pooled Cash should be analyzed and projected by fund or fund group. The audit recommends a six step approach involving the analysis of historic trends in the cash balances of major funds and fund groups (capital projects, school operations, etc.) and the projection of these balances over the budget year. Essential to this approach is the creation of a Pooled Cash database including each of the major funds and fund groups.

AUDIT SCOPE AND OBJECTIVES

AUDIT SCOPE AND OBJECTIVES

Interest on Investment ("Investment Revenue") is a revenue account in the General Purposes City Budget used to accumulate that portion of temporary interest earnings realized by the City during the budget year and deposited in the General Fund. The scope of the audit focused on the process used to estimate Investment Revenue for the annual City budget. Investment Revenue estimates are made by the Office of the City Comptroller based on an estimate and information provided by the City Treasurer's Office. The audit included the examination of records and procedures related to this Investment Revenue estimate. The audit reviewed the methods used to project investable cash balances and to estimate Investment Revenue. The audit also included interviews of staff members responsible for Investment Revenue estimation.

The objectives of the audit were to evaluate the methodology used to forecast Investment Revenue and identify possible enhancements to the process.

**ORGANIZATIONAL AND FISCAL
IMPACT**

ORGANIZATIONAL AND FISCAL IMPACT

Cash not needed to pay current City obligations is temporarily invested to earn interest. As required by State Statute, two-thirds of the investment interest generated is credited to the General Fund and one-third is credited to a City debt reserve known as the Public Debt Amortization Fund. During the period from 1991 through 1999, Investment Revenue from these temporary investments credited to the General Fund ranged from \$6,100,000 to \$11,000,000 per year.

Under the City Charter, the Office of the Comptroller provides estimates of all City revenues for the annual City budget. During May of each year, the Office of the Comptroller receives revenue estimates from departments responsible for each revenue account. Comptroller's staff reviews these estimates, adjusting them as necessary. These estimates are then forwarded to the Department of Administration - Budget and Management Division for insertion into the Executive Budget. Under the City Charter, neither the Mayor nor the Common Council may change these estimates. However, the Comptroller may modify revenue estimates at any time up to budget adoption.

The Comptroller's responsibility is to estimate achievable revenues so as to avoid a budget deficit at year end. While under-estimation of actual revenues is likewise undesirable, it is far more costly to the City to run a budget deficit due to revenue over-estimation than to realize moderate budget surpluses as a result of revenue under-estimates. Therefore, the Comptroller must estimate revenues conservatively to assure that actual City revenues meet or exceed the budget estimates.

Since the City Treasurer is responsible for the temporary investment of City funds, the Office of the City Treasurer provides the initial estimate of Investment Revenue to the Comptroller. The Office of the Comptroller reviews this estimate and makes a final estimate for inclusion in the budget. Due to the Treasurer's familiarity with day to day City cash needs, investment balances and trends, the Comptroller has rarely adjusted the Treasurer's estimate of this revenue.

The Treasurer's Investment Revenue estimation methodology consists of two steps: 1) an estimate of the average investment interest rate for the year; 2) an estimate of the average investable balance for the year. Multiplying the budget year's estimated average investable balance by the estimated average investment interest rate times two-thirds (the

prescribed portion of total interest earnings to be provided to the General Fund) results in the estimated Investment Revenue for the budget.

In Step 1), the Treasurer estimates the average investment interest rate for the coming year based upon the average of the actual investment interest rates for the prior four years adjusted for recent interest rate trends. The Treasurer will often modify this past average investment interest rate depending on professional judgement regarding the expected interest rate environment. The Treasurer has used the State Local Government Investment Pool (LGIP) as the primary investment vehicle for City temporary cash. Because the LGIP typically lags the short-term interest rate market in time due the nature of the LGIP portfolio, the Treasurer is able to anticipate the short term (2-3 month) direction of the City's investment interest rate. However, the initial Investment Revenue estimate for the next budget year must be prepared 8-20 months ahead of the actual accrual of interest. This makes the longer term projection of investment interest rate very difficult.

In step 2), the Treasurer normally estimates the budget year average investable balance using a four year average of average daily investable balances, adjusted slightly for increasing or decreasing trends. An exception was the 2001 budget. Due to a trend of rapidly decreasing investable balances and revenue shortfalls in both 1998 and 1999, the Treasurer used the two-year 1998-1999 average investable balance, then decreased this average by \$20,000,000 to derive the average investable balance to be applied to estimate the 2001 Investment Revenue.

**AUDIT CONCLUSIONS AND
RECOMMENDATIONS**

AUDIT CONCLUSIONS AND RECOMMENDATIONS

The City's estimates of Investment Revenue have often varied substantially from actual Investment Revenue realized. Actual Investment Revenue credited to the General Fund differed from budgeted Investment Revenue by amounts varying from an overage (actual above estimate) of \$5.5 million in 1995 to a revenue shortfall of \$2.5 million in 1999. As shown in Figure 1 (page 7), the percentage variance ranged from a negative 37.6% of the 1999 estimate to a positive 49.9% of the 1995 estimate. The average absolute variance for the years 1991 through 1999 was over 23%. During the period 1991 through 1999, the City Investment Revenue estimate exceeded the actual City Investment Revenue in four out of nine years

These revenue budget variances may not have caused problems when actual revenue exceeded the estimate. However, the \$1.5 million and \$2.5 million investment revenue shortfalls in 1998 and 1999 respectively have made it clear that improvement in the estimation of Investment Revenue should be a top priority for both the Comptroller and Treasurer.

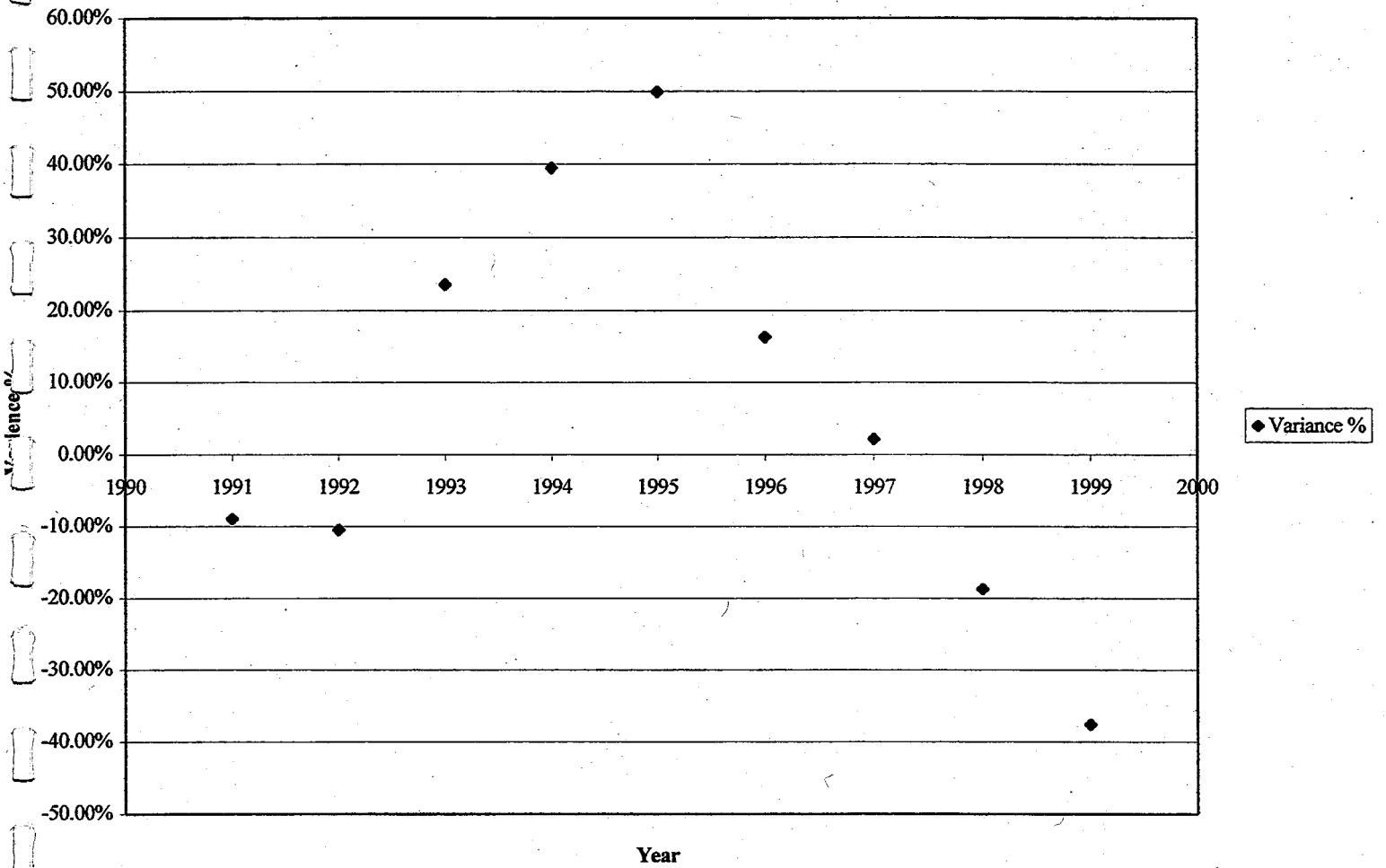
The City's Financial Management Information System (FMIS) indicates that Investment Revenue for 2000 was \$8,000,000, which exceeds the Investment Revenue estimate of \$7,200,000.

Figure 2 (page 8) assigns the variances into components caused by differences between actual/estimated investable balance variances versus interest rate variances. **Figure 2 indicates that differences between estimated and actual Investment Revenue since 1991 have been primarily the result of variances between actual and estimated investable balances.** Variances in investable balances were responsible for 57% of the total absolute variance between actual and estimated Investment Revenue from 1991 through 1999. This has been particularly true in recent years. Investable balance variances were responsible for 72% of the total absolute variance from 1996 through 1999 and 95% of the total absolute variance from 1998 through 1999.

While minor enhancements are possible, **the audit concludes that the current methods used to estimate investment interest rates are generally adequate given the inherent difficulties in such projections.** It is extremely difficult if not impossible to accurately estimate interest rates 8 to 20 months in advance of actual earnings due to the changes in

Figure 1

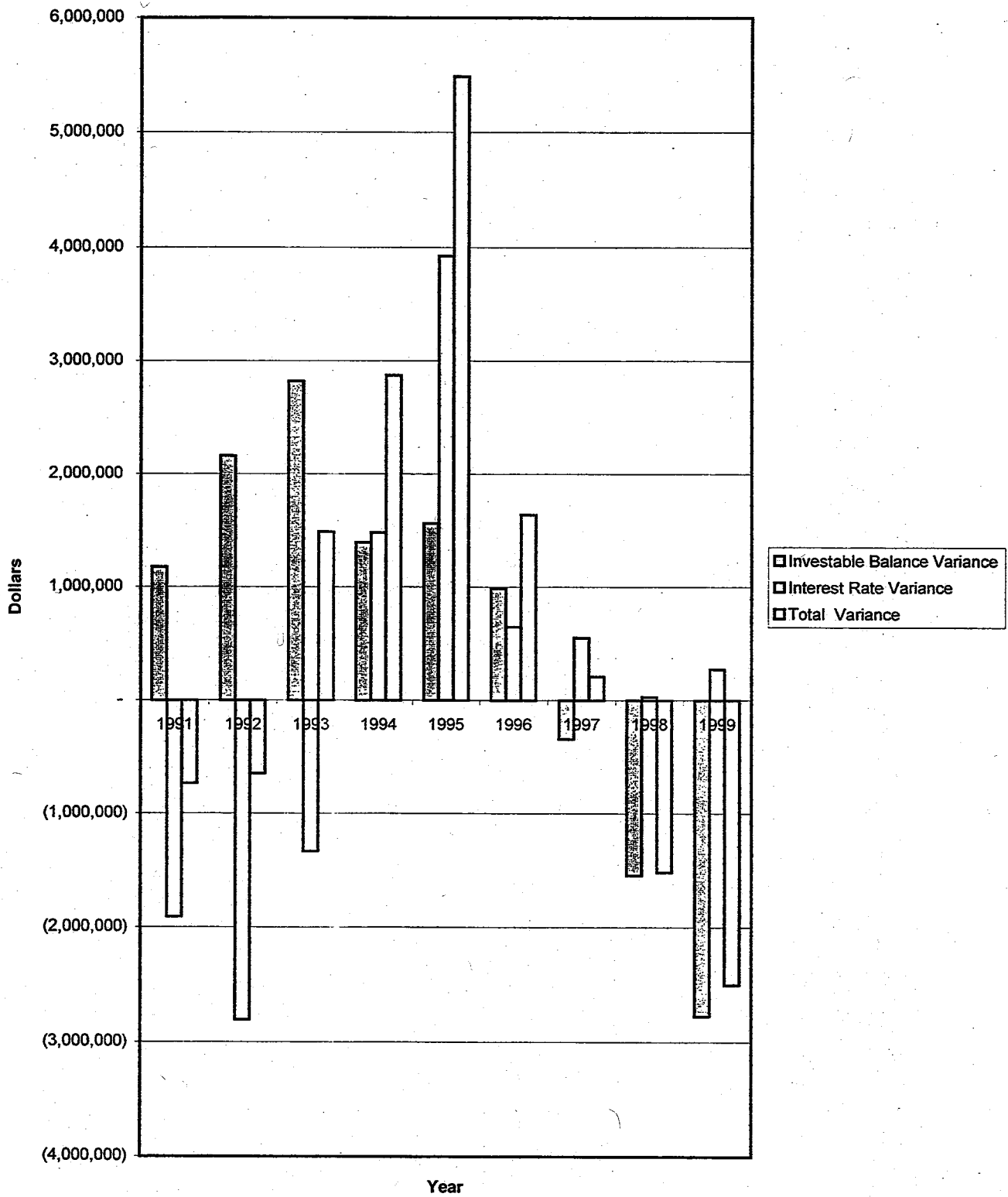
Variance Percentages



Average absolute variance is over 23%

Figure 2

Components of Variances



U.S. and world markets. Therefore, **efforts to improve investment revenue estimates should concentrate on improving the estimate of the investable balance.**

The audit further concludes that based on available data, it is possible to significantly refine and enhance projections of investable balance. This can be achieved by investigating and forecasting trends in the underlying business components of investable cash (capital projects, delinquent tax receipts, City debt proceeds, etc.). Rather than simply projecting a single average investable balance, the audit suggests examining the past cash balance trends of each of the major fund components. With the aid of the City departments administering these cash components, the City Comptroller's Office assisted by the Treasurer's Office could then project each of these components based upon facts gathered from these departments. For example, the staff of the Office of the Comptroller could itself provide information regarding the amount and timing of capital borrowing while the Department of Public Works could provide information on planned capital project spending.

Information necessary to enhance the current investable balance projections is available from both the Treasurer's investment management system and the City's FMIS system. The Treasurer's investment portfolio management software does provide historical average daily investable balances in total, but does not provide a breakdown of the various fund account sources of investable cash.¹ However, the City's Financial Management Information System (FMIS) provides month-end balances of each fund's equity in the City's Cash and Investment Pool ("Pooled Cash"). **The audit recommends that the current Investment Revenue estimation process be expanded based on the FMIS fund specific balance information. The audit has identified six major funds and fund groups which materially impact the amount of temporary investment earnings. These funds/fund groups should be analyzed and projected by fund or related fund group.** The patterns of revenues and expenditures in these funds are likely to vary. These six funds and a brief explanation of each are listed in Exhibit A.

City Investment Revenue is derived from the investment of temporary cash balances in Pooled Cash. However, not all money included in the Pooled Cash can be invested. Certain cash accounts such as the payroll account and the accounts payable account are not available for investment. Also, some bank accounts require the City to maintain a

¹ The investable balance consists of a portion of Account 101101, Equity - Cash and Investment Pool, in the City's General Fund, Special Revenue Funds, Debt Service Funds, Capital Projects Funds, Proprietary Funds and Trust and Agency Funds.

compensating balance at the bank without earning interest to offset bank fees. In order to utilize fund specific data to enhance estimates of cash balances, the cash balance data must be adjusted to remove any components not available for investment.

Suggested Process for Further Improving Investment Revenue Budget Estimate

The audit recommends the following approach to enhancing the City's Investment Revenue estimation methodology:

1. March: Review investable cash balance and interest rate assumptions in comparison to actual as in the past. Provide an initial estimate of average investable cash balance, interest earnings rate and Investment Revenue for the next budget year.

- Examine monthly and quarterly information for the past two years as the basis for projections for the coming budget year estimates.

2. March-April: Create/Update an Equity in Pooled Cash database for all key cash accounts

- Extract monthly Equity in Pooled Cash (account 101101) balance data for each of the key funds or fund groups listed in Exhibit A for the past 24 months

3. April- June: Analyze Equity in Pooled Cash balance for each key fund or fund group to determine reasons for major monthly trends and changes to occur over the next 20 months.

- Prepare a trend graph of Equity in Pooled Cash balances for each fund or fund group to aid in identifying seasonal changes.
- Interview department personnel familiar with each fund or fund group.
- Quantify impact of major past and future trends and non-routine cash changes.

4. June: Project monthly Equity in Pooled Cash balances for each key fund or fund group.

- Review with department personnel familiar with each fund or fund group and modify estimates in accordance with the information obtained.
- Calculate a total estimated monthly Equity in Pooled Cash for all funds. Adjust these estimates downward to obtain monthly estimates of investable balances.

5. June-July: Prepare updated Investment Revenue Estimate based on the above monthly data.

- Compare the Investment Revenue Estimate obtained from monthly data to the initial Investment Revenue Estimate.
- Prepare an updated Investment Revenue Estimate after analyzing both estimates.
- Document all relevant calculations and assumptions. The accuracy of these calculations and assumptions can be analyzed in future years to improve Investment Revenue forecasts.

- Staff from the Office of the Comptroller, assisted by the Office of the City Treasurer, should review the Investment Revenue Estimate, including the calculations and assumptions, and agree on an Investment Revenue Estimate.
- 6. August-October: As year and budget process progresses, update as appropriate investable balance and interest rate projections based on new information and trends.**
- Review the most recent monthly Equity in Pooled Cash and investable balance data available to obtain a final investable balance estimate. For years subsequent to the first year this methodology is used, this analysis should include a comparison of actual and estimated monthly investable balances.
 - Update the interest rate estimate based on current interest rates and expected changes due to such things as expected Federal Reserve actions. It may be useful to estimate the budget year interest rate on a quarterly basis to reflect expected interest rate trends.
 - Prepare a final Investment Revenue Estimate using the updated investable balance and interest rate estimates.

EXHIBIT

Key Funds and Fund Groups

1. **General Fund (0001):** This is the City's primary operating fund. Staff in the Office of the City Treasurer and the Office of the Comptroller could provide insight into Equity in Pooled Cash trends.
2. **Reimbursable Fund (0007):** Equity in Pooled Cash in this fund represents amounts owed by City departments for reimbursable expenditures. The Office of the Comptroller could provide insight into cash trends.
3. **Capital Projects Funds (03xx):** These funds are used to account for City construction projects. The Office of the Comptroller could provide insight into the amount and timing of capital borrowing. The Department of Public Works (DPW) could provide insight into planned capital spending.
4. **Water Works Administration Fund (0410), Water Works Capital Fund (0420), Water Works Segregated Cash (0410, Accounts 1012xx-1015xx):** Water Works operating and capital expenditures are paid by the General Fund. These expenditures are reflected in Equity in Pooled Cash in Funds 0410 and 0420. The expenditures are reimbursed from Water segregated cash. DPW-Water Works could provide insight into cash trends in these funds.
5. **Other Proprietary Funds (04xx, 05xx):** These funds are used for proprietary fund operations. Personnel in each responsible department could provide insight into cash trends.
6. **School Operations Fund (0796), School Construction Fund (0797), School Extension Fund (0798):** These funds are used for Milwaukee Public Schools (MPS) expenditures. The Office of the Comptroller receives MPS cash flow projections in connection with annual revenue anticipation borrowing for MPS. The MPS Finance Department could also provide insight into cash trends.

DEPARTMENT RESPONSE

WAYNE F. WHITTOW
CITY TREASURER



OFFICE OF THE CITY TREASURER
MILWAUKEE, WISCONSIN

March 29, 2001

W. Martin Morics
City Comptroller
City Hall, Room 404

Dear Mr. Morics:

I have reviewed the "Audit of City of Milwaukee Investment Revenue Estimation." Because the data to determine the estimate of revenue for the annual City budget is in the Comptroller's Office, I agree with the audit recommendations to refine the estimating process.

Since the Comptroller has charter responsibilities to provide estimates of all City revenues, they will continue to be responsible for the estimating process assisted by staff from my office. In addition, my office will continue to provide an estimate of the average interest rate for the upcoming budget year.

If you have any questions, please give me a call.

Sincerely,

WAYNE F. WHITTOW
City Treasurer

WFW/JLH/rms