

**Audit of  
Change Management for PeopleSoft System**

**January 13, 2023**

**Report #2023-02**

**MISSION STATEMENT**

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# Audit of Change Management for PeopleSoft System

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# Audit of Change Management for PeopleSoft System

## EXECUTIVE SUMMARY

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Pursuant to the *Office of Inspector General's (OIG) 2020-2021 Work Plan*, we have audited the Change Management Procedures for the PeopleSoft System. The primary objectives of the audit were to determine whether (1) documented Change Management Procedures were in place and followed for both planned and emergency maintenance and updates to the PeopleSoft System; (2) software changes to the PeopleSoft System were authorized, documented, tested, and reviewed prior to implementation; (3) adequate segregation of duties and access controls existed for promoting software changes from testing to production environments; and (4) vendors' billings and deliverables complied with the terms and conditions of the *Purchase Contracts* for conversion from DB2 to Oracle database. The audit produced the following major conclusions:

### **1. PeopleSoft Change Management Procedures Appeared Adequate But Need Codification**

Multiple Methods for Initiating a Change Request. According to staff, software changes could be initiated through email requests, phone calls, or eSupport<sup>1</sup> service tickets. The Enterprise Resource Planning (ERP) Department used the *Quality Assurance Project Requirements Matrix Checklist* (See Exhibit B on page 14) to document and ensure all the key procedures were completed before the updated software could be implemented in the production environment.

Four PeopleSoft Copies/Environment. To protect the integrity of the production environment, the District maintained four copies of the PeopleSoft System in four separate IT environments. An IT environment is a software and hardware configuration/setup that allows the users to conduct certain tasks. Each copy/environment has a specific purpose when making changes to the software. IT staff develop/update the PeopleSoft copy in the development (DEV) environment. To ensure the updated software was performing in accordance with the requested changes, the ERP Department performed functionality test in the test (TST) environment, and the key users from the Human Resources and Financial Services Departments performed the user acceptance test in the quality assurance (PQA) environment.

Migration of Updated Software to the Production Environment. Once the updated software had been tested and accepted by the end user, an ERP Department functional specialist would submit a Request for Change (RFC), via the eSupport System, for the Change Advisory Board (CAB) review and approval before the System Administrator would move the updated software to the production environment.

Our review concluded that the PeopleSoft Change Management Procedures appeared adequate for documenting the initiation, authorization, and implementation of changes to the PeopleSoft System.

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<sup>1</sup> eSupport is the District's customer service tracking system used to document user IT requests for access, etc.

Change Management Procedures Need Codification. We noted that the software change management procedures, including the *ERP Quality Assurance (QA) Methodology*, and the *Quality Assurance Project Requirements Matrix Checklist (QA Matrix Checklist)* were documented in separate documents, instead of codified in a comprehensive procedures manual. Moreover, inconsistent methods for initiating a software change request could result in certain critical change requests being overlooked by staff causing delays and potential negative impacts to the District's operations.

*Management's Response:* A standardized procedure for initiating a software change is in place. As recommended the checklist has been included in the procedure manual. The source of the change can be initiated in different ways due to the type [of] change or department requesting the change, however the standard process is followed for all changes. (See page 16.)

## 2. Tracking of PeopleSoft Changes Needs Improvement

The District utilized three systems (Bugzilla, SharePoint/GoogleDocs and eSupport) to track and document changes to the PeopleSoft system. The Bugzilla System was used to document how the changes/issues were resolved. The SharePoint/GoogleDocs Systems were used to maintain the supporting documents related to each PeopleSoft change. The eSupport System was used to submit *Request for Change Ticket* for the Change Advisory Board review and approval for migrating the updated software to the production environment.

Our review found that:

- There were multiple methods for users to initiate a PeopleSoft change request.
- There were no automated interfaces among the three systems. All information was manually entered into each of the three systems.
- Multiple tracking numbers were assigned to each software change request. A 4-digit *bug number* was automatically assigned by the Bugzilla System; a 6-digit *Master Identification Document* number was manually assigned by the ERP Department; and a different 6-digit *Request for Change Ticket Number* was automatically generated by the eSupport System. Each of the tracking numbers was required to be manually entered into the other two tracking systems.

*Management's Response:* A standardized procedure for initiating a software change is in place, see response to recommendation #1. The tracking numbers are manually entered into the systems for cross referencing purposes. Management is currently researching the applications available to eliminate the need for multiple systems. (See page 16.)

### 3. IT General Controls for PeopleSoft Change Management Appeared Adequate

We reviewed the access controls for the Bugzilla, eSupport, SharePoint and the PeopleSoft tools (Data Mover<sup>2</sup> and Application Designer<sup>3</sup>) for updating the PeopleSoft production environment. The review concluded that the controls, as well as the procedures for backing up the records in the Bugzilla, eSupport, and SharePoint systems appeared adequate.

However, we noted two Bugzilla user IDs were not removed as of June 30, 2021. Specifically, one user's employment with the District was terminated on March 6, 2021, and one user was transferred to a school on June 1, 2021.

***Management's Response:** Effective October 3, 2022, to keep the user list current, the ERP team is reviewing the Bugzilla user accounts bi-weekly, disabling terminated employees' accounts and evaluating whether transferred employees require access in their new position. Management would like to reiterate that terminated employees are not able to access the District Portal and Network as their Active Directory access is revoked upon termination. They are thereby unable to access the Bugzilla system. (See page 17.)*

### 4. Conversion of DB2 to Oracle Successfully Completed; Vendor Overbilled the District by \$877.50

The District's PeopleSoft System was installed and operated on a DB2<sup>4</sup> database management system. In May 2018, the vendor announced PeopleSoft would discontinue support of the DB2 platform effective January 2022. During FY2020, the District began the preparation of the conversion from the DB2 to the Oracle database management system for the PeopleSoft System. The conversion occurred during March 2020 through May 2021.

The OIG reviewed the records for converting 26 sample PeopleSoft Modules and concluded that the quality assurance processes for the conversion were completed and adequately documented.

However, we found a vendor who assisted the District with the database conversion overbilled the District by \$877.50 through duplicated invoices. We informed staff of the duplicate charges during the audit. Subsequently, the District received the refund of \$877.50 from the vendor in FY2022.

***Management's Response:** Management concurs that all invoices and the supporting documents should be verified by staff prior to processing for payment. We will be discussing with the business to improve the Purchase Order receiving procedure and/or system process by December 31, 2022. (See page 17.)*

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<sup>2</sup> 'Data Mover' allows the user to move data between different IT environments, e.g. moving test data from the TST environment to the PQA environment.

<sup>3</sup> 'Application Designer' allows the user, who has the required access to the production (PRD) environment, to make program changes to PeopleSoft in the PRD environment, therefore bypassing the change management workflow.

<sup>4</sup> Both DB2 and Oracle are relational database management systems (RDBMS) for storing and managing massive amounts of data and queries.

## 5. PeopleSoft Changes Were Adequately Documented

During FY2021 and FY2022, a total of 1,137 PeopleSoft change requests were opened and 1,012 requests were closed. We selected 15 sample PeopleSoft changes, including software repairs and upgrades, from the Bugzilla system for detailed review of documentation. Our review of the 15 sample changes concluded the software changes were adequately supported with the following documentation: (1) design specifications, test plans, and test cases; (2) developer's testing and user acceptance testing of the updated software with appropriate sign-offs; and (3) authorization for moving the updated software to the production environment.

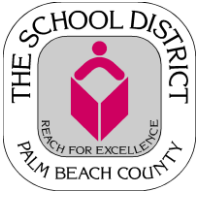
*Management's Response: Management concurs that PeopleSoft changes are adequately documented. (See page 17.)*

## 6. Emergency Software Changes Appeared Excessive

Changes and updates to the PeopleSoft System were batched together and implemented on a weekly maintenance schedule. According to staff, any migrations completed outside the normal scheduled maintenance window were considered "emergency." Our review of the eSupport records found that annually between 24% and 43% of changes in the past six fiscal years had an urgency type classification of emergency. In addition, our review of sample emergency changes revealed no documentation was maintained indicating (a) the reasons/justifications for the emergency classification, or that (b) the changes were reviewed for proper classification and approval. A high number of emergency software updates could indicate potential misuse of the emergency migration procedures or poor planning for implementation of software updates.

*Management's Response: Emergency changes are necessary. Maintaining the integrity of the District's computer systems is of utmost priority. All software changes (including emergency changes) are tested, reviewed by the QA team, and approved by the Business owner prior to implementation without any exceptions. (See page 17.)*





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## MEMORANDUM

**TO:** Honorable Chair and Members of the School Board  
Michael J. Burke, Superintendent of Schools  
Chair and Members of the Audit Committee

**FROM:** Teresa Michael, Inspector General

**DATE:** January 13, 2023

**SUBJECT:** Audit of Change Management for PeopleSoft System

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### PURPOSE AND AUTHORITY

Pursuant to the *Office of Inspector General's (OIG) 2020-2021 Work Plan*, we have audited the Change Management Procedures for the PeopleSoft System. The primary objectives of the audit were to determine whether:

1. Documented Change Management Procedures were in place and followed for both planned and emergency maintenance and updates to the PeopleSoft System.
2. Software changes to the PeopleSoft System were authorized, documented, tested, and reviewed prior to implementation.
3. Adequate segregation of duties and access controls existed for promoting software changes from testing to production environments.
4. Vendors' billings and deliverables complied with the terms and conditions of the *Purchase Contracts* for conversion from DB2 to Oracle database.

### SCOPE AND METHODOLOGY

This audit was conducted in accordance with *Generally Accepted Government Auditing Standards*. Those standards require that we plan and perform the audit to obtain sufficient and appropriate evidence to provide a reasonable basis for our findings and conclusions based on the audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions.

This audit covered updates to the PeopleSoft System during Fiscal Years 2021 and 2022. The audit included interviewing staff and reviewing:

- **School Board Policies:**
  - **2.501 - Information Security - Access Control Policy**
  - **6.14 - Purchasing Department**
- Access controls for the PeopleSoft System
- Test plans, test cases, test results, and sign-offs for System Integration Testing (SIT) and User Acceptance Testing (UAT) for sample PeopleSoft changes
- Functional, security, and technical specification documents of sample PeopleSoft changes
- **Purchasing Manual**
- Purchasing Department's **Standard Operating Procedures No. 2: Required Information on Purchase Orders and Change Orders** specifically **Form PBSO 2566 - Business Case for Technology or Maintenance Expenditure**
- Best practices for software change management recommended by selected professional organizations:
  - **Control Objectives for Information and Related Technologies** (COBIT 2019), Information Systems Audit and Control Association (ISACA)
  - **Special Publication (SP) 800-53, Revision 4, 'Development Process, Standards, and Tools'**, National Institute of Standards and Technology (NIST)
  - **Global Technology Audit Guide (GTAG) IT Change Management, 3<sup>rd</sup> Edition – February 2020**, Institute of Internal Auditors (IIA)

Draft findings were discussed with staff during the audit so that corrective actions could be implemented accordingly. The draft report was sent to management for review and comments. Management responses are included in the Appendix. We appreciate the courtesy and cooperation extended to us by staff during the audit. The final draft report was presented to the Audit Committee at its January 13, 2023, Meeting.

## **BACKGROUND**

The Oracle PeopleSoft System (PeopleSoft) is the District's Enterprise Resource Planning (ERP) computer software for processing and reporting of human capital management and financial transactions. Every change to this important IT system could create the risk of potentially unwanted consequences. Strong change management practices help prevent unauthorized and untested software changes.

PeopleSoft Change Activities. The Institute of Internal Auditors broadly defines change management as "*the technology changes that affect an organization's systems, programs, or applications.*"<sup>5</sup> During Fiscal Year (FY) 2021, there were 526 PeopleSoft change requests opened and 487 requests closed. During FY2022, 611 change requests were opened and 525 requests were closed. Change requests were classified into three categories: incident, administrative, or modification. (See Table 1.)

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<sup>5</sup> **Global Technology Audit Guide (GTAG) IT Change Management, 3<sup>rd</sup> Edition – February 2020**, Institute of Internal Auditors.

**Table 1**  
**PeopleSoft Change Requests**  
**Completed During FY2021 and FY2022**

Application	FY2021			FY2022		
	Incident	Administrative	Modification	Incident	Administrative	Modification
Human Capital	167	61	106	146	118	70
Financial	37	28	31	46	55	22
Infrastructure	18	17	-	14	23	6
eLearning Management	16	2	4	11	3	2
Unclassified	-	-	-	8	1	-
<b>Total</b>	<b>238</b>	<b>108</b>	<b>141</b>	<b>225</b>	<b>200</b>	<b>100</b>
	<b>487</b>			<b>525</b>		

Source: ERP Department's Dashboard (Bugzilla System)

Note: During FY2021 and FY2022, a total of 1,137 Bugzilla tickets were opened and 1,012 requests were closed.

## CONCLUSIONS

This audit produced the following major conclusions:

### 1. PeopleSoft Change Management Procedures Appeared Adequate But Need Codification

There are many reasons for making changes to software applications; such as planned and emergency maintenance, user requests for new functionalities, and software upgrades and patches<sup>6</sup> provided by the software vendors, etc. Proper software change controls should help ensure all software applications and database changes are properly evaluated, authorized, documented, and tested before implementing in the production environment.

PeopleSoft Change Management Process. According to staff, software changes could be initiated through email requests, phone calls, or eSupport<sup>7</sup> service tickets. The change management process for the PeopleSoft System began when the ERP Department recorded the request into the Bugzilla<sup>8</sup> system for tracking the status of the software changes.

The ERP Department used the *Quality Assurance Project Requirements Matrix Checklist* (See Exhibit B on page 14) to document and ensure all the key procedures were completed before the updated software could be implemented in the production environment. Depending on the type of software change, the *Matrix* required detailed documentation and sign-off by responsible staff during the four phases of software development: design, development, testing, and production quality assurance review. The testing results (unit test, system integration test, and user acceptance test) and sign-off records were maintained in the SharePoint<sup>9</sup> system by the Enterprise Resource Planning (ERP) Department.

<sup>6</sup> Patches are sets of software changes for fixing programming errors and/or security vulnerabilities.

<sup>7</sup> eSupport is the District's customer service tracking system used to document user IT requests for access, etc.

<sup>8</sup> Bugzilla is a free web-based tool used to track software issues (bugs).

<sup>9</sup> The ERP Department has replaced SharePoint with GoogleDocs for maintaining documentation beginning November 2021.

Four PeopleSoft Copies/Environments. The District maintained four copies of the PeopleSoft software in four separate IT environments. An IT environment is a software and hardware configuration/setup that allows the users to conduct certain tasks. Each copy/environment has a specific purpose when making changes to the software.

DEV	System Development and Unit Testing
TST	Functional and System Testing
PQA	Business and User Acceptance Testing
PRD	Production

To protect the integrity of the production environment, IT staff developed/updated the PeopleSoft copy in the development (DEV) environment. To ensure the updated software was performing in accordance with the requested changes, the ERP Department performed functionality test in the test (TST) environment, and key users from the Human Resources and Financial Services Departments performed user acceptance test in the quality assurance (PQA) environment.

Migration of Updated Software to the Production Environment. Once the updated software had been tested and accepted by the end user, an ERP Department functional specialist would submit a Request for Change (RFC), via the eSupport System, for the Change Advisory Board (CAB) review and approval. The CAB is comprised of IT and business unit professionals. During the review, the CAB would assess the potential risks and impacts on the District's operations resulting from the software changes. Upon completion of a satisfactory review and risk assessment, the CAB would authorize the System Administrator to move the updated software to the production environment. (See Exhibit C for the *PeopleSoft Change Management Flowchart* on page 15.)

Our review concluded that the PeopleSoft Change Management Procedures appeared adequate for documenting the initiation, authorization, and implementation of changes to the PeopleSoft System.

Change Management Procedures Need Codification. We noted that the software change management procedures, including the *ERP Quality Assurance (QA) Methodology*, and the *Quality Assurance Project Requirements Matrix Checklist (QA Matrix Checklist)* were documented in separate documents, instead of codified in a comprehensive procedures manual. Moreover, inconsistent methods for initiating a software change request could result in certain critical change requests being overlooked by staff causing delays and potential negative impacts to the District's operations.

A Change Management Procedures Manual should provide a standardized methodology to assist with the effective management of software changes and avoid inconsistent practices through standardized change initiation, approval, documentation, etc. The manual should provide a basis for employee training.

## Recommendation

To ensure consistency in managing PeopleSoft Changes, the ERP Department and IT Division should (1) codify the change management procedures in a Change Management Procedures Manual and (2) consider developing a standardized procedures for initiating a software change request.

***Management's Response:** A standardized procedure for initiating a software change is in place. As recommended the checklist has been included in the procedure manual. The source of the change can be initiated in different ways due to the type [of] change or department requesting the change, however the standard process is followed for all changes. (See page 16.)*

## 2. Tracking of PeopleSoft Changes Needs Improvement

The District utilized three systems to track and document changes to the PeopleSoft system:

Bugzilla - A Bugzilla 'bug' was created when there was a software issue, enhancement, update, regulatory update, etc. Reasons for the change were entered into the Bugzilla System. The software development teams used Bugzilla to document how the issues were resolved.

SharePoint/Google Docs<sup>10</sup> - Supporting documentation related to each PeopleSoft change was manually created and stored in the SharePoint/GoogleDocs Systems. This documentation included functional and technical specifications, system integration testing (SIT) sign-offs, user acceptance testing (UAT) sign-offs, test results, etc.

eSupport - Once a change had been successfully tested and was ready to be moved into production, the ERP Department would submit a Request for Change<sup>11</sup> (RFC) ticket in the eSupport System. The *RFC Tickets* were reviewed by the Change Advisory Board (CAB) during their weekly meetings.

Our review of the procedures for tracking PeopleSoft changes revealed the following areas for improvement: (a) inconsistent/multiple methods for initiating a change request, (b) multiple tracking numbers assigned to each software change request, and (c) lack of interface between multiple tracking systems. Specifically,

### (a) Inconsistent/Multiple Methods For Initiating A Change Request

There were multiple methods for users to initiate a PeopleSoft change request: (1) by submitting a service ticket in the eSupport System, or (2) by sending an email or making a phone call to the functional specialists or subject matter experts in the ERP Department or IT Division. Upon receipt of the request, the ERP Department manually entered the change request into the Bugzilla System for monitoring and tracking the status of the request.

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<sup>10</sup> In November 2021, the ERP Department switched to GoogleDocs from SharePoint for maintaining PeopleSoft software change documentation.

<sup>11</sup> An RFC is created when there is a requirement for migration to production.

Without a standardized method for requesting changes to the PeopleSoft System, some of the requests, especially those requested by phone calls, could be overlooked causing delays and potential negative impacts to the District’s operations.

(b) Lack Of Interface Among Multiple Tracking Systems

There were no automated interfaces among the three systems. All information was manually entered into each of the three systems. (See Table 2.)

**Table 2**  
**Change Management Monitoring Systems**

<b>Tracking System</b>	<b>Responsible Parties</b>	<b>Description</b>
Bugzilla System	ERP Department / IT Enterprise Applications Department	Original entry point for PeopleSoft changes, including vulnerabilities and software patches, and user requests submitted via eSupport, emails and phone calls. “Bugs” were manually created and updated.
SharePoint / GoogleDocs Systems	ERP Department / IT Enterprise Applications Department	Stores all documentation related to PeopleSoft changes such as planning, design, and test results and sign-offs. Documents were manually created and stored here.
eSupport System	IT Enterprise Applications Department	Once a change was tested and ready to be moved into production, a separate eSupport service ticket was manually entered for approval of the move. A Request for Change (RFC) number was automatically created in eSupport, which must be manually entered into Bugzilla.

The lack of automated interface for updating and sharing information among the three tracking systems required additional human resources for updating the information in the systems. More importantly, the manual update of the same information into multiple systems could cause inconsistencies in the information maintained in, and reported by, the three systems, and result in potential delays and ineffective monitoring of critical software changes.

(c) Multiple Tracking Numbers Assigned To Each Software Change Request

Different tracking numbers were used on each of the three tracking systems:

- A sequential, four-digit *Bug Number* was automatically generated and assigned by the Bugzilla System to each new change request entered into the system.
- A separate six-digit *Master Identification Document (MIDD) Number* was manually assigned by the ERP Department for referencing the functional area or module in PeopleSoft that was to be changed, and identifying the related change request documentation maintained in the SharePoint/GoogleDoc Systems. A single *MIDD Number* might involve multiple change requests. The same *MIDD Number*

needed to be manually entered into multiple Change Request (*Bug*) Records in the Bugzilla System.

- A different six-digit *Request for Change (RFC) Ticket Number* was automatically generated by the eSupport System when the ERP Department created a service ticket in the eSupport System for implementing the updated software into the production environment. The *RFC Ticket Number* was then manually updated into the *Bug Records* in the Bugzilla System by the ERP Department.

Table 3 outlines the different tracking numbers used by the three tracking systems.

**Table 3**  
**Inconsistent Numbering Systems for Tracking PeopleSoft Change Requests**

Tracking System	Change Request Reference Number	Source of the Tracking Number
Bugzilla	4-Digit Bug Number	Automatically generated and assigned by the Bugzilla System.
	6-Digit MIDD Number	Manually entered into the system when the MIDD Number was available (manually assigned by the ERP Department).
	6-Digit RFC Number	Manually entered into the system when the RFC Number was available (automatically generated by the eSupport System).
SharePoint / GoogleDocs	6-Digit MIDD Number	Manually assigned by the ERP Department
eSupport	6-Digit RFC Number	Automatically generated and assigned by the eSupport System.

**Recommendations**

To enhance the efficiency and effectiveness of the change request tracking procedures, the ERP Department and IT Division should review and update the tracking methods, including developing and implementing:

- A standardized procedure for initiating and submitting a change request.
- A standardized change request numbering system for use by the various tracking systems.
- An automatic interface among the various systems for updating and sharing the change request information.

*Management’s Response: A standardized procedure for initiating a software change is in place, see response to recommendation #1. The tracking numbers are manually entered into the systems for cross referencing purposes. Management is currently researching the applications available to eliminate the need for multiple systems. (See page 16.)*

### 3. IT General Controls for PeopleSoft Change Management Appeared Adequate

We reviewed the access controls for the Bugzilla, eSupport, SharePoint and the PeopleSoft tools (Data Mover<sup>12</sup> and Application Designer<sup>13</sup>) for updating the PeopleSoft production environment. The review concluded that the controls appeared adequate.

Backups of Software Change Records Were Maintained. Our review of the procedures for making backup copies of the software change records maintained in the Bugzilla, eSupport, and SharePoint Systems concluded that the backup procedures appeared adequate. No exceptions were noted during the review.

Two Bugzilla User IDs Not Timely Removed. *School Board Policies 2.501.2.a.viii-x.*, require system restrictions, and periodic reviews of those restrictions, based on business and information security requirements to ensure users' "...access is approved and authorized." *School Board Policy 2.501.2.a.ix* further mandates a user's ID shall be immediately disabled when a resignation or termination change in his/her status occurs in PeopleSoft.

We noted two Bugzilla user IDs were not removed as of June 30, 2021. Specifically, one user's employment with the District was terminated on March 6, 2021, and one user was transferred to a school on June 1, 2021.

#### Recommendation

Access to District's computer systems should be provided to users on an as-needed-basis. User IDs for terminated or transferred employees should be timely removed to avoid unauthorized access to the District's computer systems and records.

*Management's Response: Effective October 3, 2022, to keep the user list current, the ERP team is reviewing the Bugzilla user accounts bi-weekly, disabling terminated employees' accounts and evaluating whether transferred employees require access in their new position. Management would like to reiterate that terminated employees are not able to access the District Portal and Network as their Active Directory access is revoked upon termination. They are thereby unable to access the Bugzilla system. (See page 17.)*

### 4. Conversion of DB2 to Oracle Successfully Completed; Vendor Overbilled the District by \$877.50

The District's PeopleSoft System was installed and operated on a DB2<sup>14</sup> database management system. In May 2018, the vendor announced PeopleSoft would discontinue support of the DB2 platform effective January 2022. During FY2020, the District began the preparation of the

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<sup>12</sup> 'Data Mover' allows the user to move data between different IT environments, e.g. moving test data from the TST environment to the PQA environment.

<sup>13</sup> 'Application Designer' allows the user, who has the required access to the PRD environment, to make program changes to PeopleSoft in the PRD environment, therefore bypassing the change management workflow..

<sup>14</sup> Both DB2 and Oracle are relational database management systems (RDBMS) for storing and managing massive amounts of data and queries.



conversion from the DB2 to the Oracle database management system for the PeopleSoft System. The conversion occurred during March 2020 through May 2021.

The OIG reviewed the documentation maintained in SharePoint for converting the following PeopleSoft modules from DB2 to Oracle (See Table 5).

**Table 5**  
**Sample PeopleSoft Modules Reviewed by OIG**

1. Asset Maintenance	14. Inventory Management
2. Accounts Payable	15. ELM
3. Accounts Receivable	16. Portal
4. Budgets	17. Projects & Costing
5. Billing	18. P-Cards
6. Benefits	19. Purchasing
7. Contracts	20. Payroll
8. DOE Survey2	21. Risk Management
9. Enterprise Component	22. Recruiting
10. E-Procurement	23. Security
11. ERP Technology	24. Time & Labor
12. General Ledger	25. Activity and Field Trips
13. HCM General	26. Workforce Development

Quality Assurance for Software Changes Completed and Documented. For each module, we reviewed the *Quality Assurance Project Requirements Matrix Checklist (QA Matrix Checklist)* for documenting the completion of test cases development, user test results, UAT sign-offs, SIT test results, and SIT sign-offs. We also obtained evidence that parallel operations<sup>15</sup> took place until all pre-defined checkpoints comparing the two sets of data and operations confirmed that both platforms were performing equally. No exceptions were noted during the review.

Vendor Overbilled the District by \$877.50. During FY2021 and FY2022, the District paid a total of \$369,531 to two vendors (\$265,716 in Oracle software license fees and \$103,815 in consultant fees) for converting the DB2 System to the Oracle System for supporting the PeopleSoft System (See Table 6.)

Our review of all *Purchase Orders* and invoices related to the DB2 to Oracle database management system conversion found the amounts paid were consistent with the related contracts; except \$877.50 in consultant fees for services provided during January 17 through 23, 2021, were included in two invoices (#178953 and #178953-1). We informed staff of the duplicated charges during the audit. Subsequently, the District received the refund of \$877.50 from the vendor in FY2022.

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<sup>15</sup> Parallel operations include running both the old system and the new system simultaneously until the implementation is considered satisfactory as all updates, output, etc. are the same in both systems.

**Table 6**  
**DB2 to Oracle Database Management System Related Expenses**  
**During FY2021 and FY2022**

<b>Vendor</b>	<b>Purpose</b>	<b>Number of Invoices</b>	<b>Total Amount</b>
Mythics, Inc.	Software and Licenses	6	\$265,716.00
GlobalSource, Inc.	Consultant Services	39	102,937.50
	Duplicated Charges	1	877.50
<b>Total</b>		<b>46</b>	<b>\$369,531.00</b>

*Source: PeopleSoft Accounts Payable*

**Recommendation**

To ensure proper fiscal accountability and vendors' compliance with the purchase contracts, the billing details for all invoices and the supporting documents should be verified by staff prior to processing for payment.

*Management's Response: Management concurs that all invoices and the supporting documents should be verified by staff prior to processing for payment. We will be discussing with the business to improve the Purchase Order receiving procedure and/or system process by December 31, 2022. (See page 17.)*

**5. PeopleSoft Changes Were Adequately Documented**

During FY2021 and FY2022, a total of 1,137 PeopleSoft change requests were opened and 1,012 requests were closed. We selected 15 sample PeopleSoft changes, including software repairs and upgrades, from the Bugzilla system for detailed review of documentation. (See Table 6.)

**Table 6**  
**Selected Samples of PeopleSoft Changes**  
**Reviewed by OIG**

<b>PeopleSoft Subsystem</b>	<b>Module Component</b>	<b>Implementation Date</b>
1. HCM - Payroll	Checks	7/1/2020
2. HCM - Time and Labor	Report Time	12/17/2020
3. HCM - Time and Labor	Report Time	9/3/2020
4. HCM - Time and Labor	Report Time	8/26/2020
5. HCM - Time and Labor	Report Time	8/28/2020
6. HCM - Time and Labor	Report Time	1/10/2020
7. FIN - AP	PB Interface	3/29/2021
8. FIN - EPM	Data Integration	3/26/2021
9. HCM - Position Management	Modification	4/30/2021
10. ELM	HCM - Evaluations	9/9/2020
11. HCM - Payroll	Tax Processing	6/11/2020
12. HCM - Time and Labor	Absence Processing	9/16/2020
13. FIN - SCM	Inventory	1/6/2022
14. ELM	General	1/28/2022
15. FIN - AP	PB Interface	4/22/2022

*Sources: Bugzilla System and PeopleSoft System.*

Our review of the 15 sample changes concluded the software changes were adequately supported with the following documentation:

- Design specifications, test plans, and test cases;
- Developer’s testing and user acceptance testing of the updated software with appropriate sign-offs; and
- Authorization for moving the updated software to the production environment.

*Management’s Response: Management concurs that PeopleSoft changes are adequately documented. (See page 17.)*

## 6. Emergency Software Changes Appeared Excessive

Changes and updates to the PeopleSoft System were batched together and implemented on a weekly maintenance schedule. According to staff, any migrations completed outside the normal scheduled maintenance window were considered “emergency.”

Changes classified as emergency typically involved security issues or production-related changes. This type of change required immediate attention, special authorizations, and additional reviews.

Our review of the eSupport records found that annually between 24% and 43% of changes in the past six fiscal years had an urgency type classification of emergency. (See Table 7.)

**Table 7**  
**eSupport Urgency Classifications of Production Migrations**

Fiscal Year	Urgency Type		Total
	Emergency	Scheduled	
FY 2016	149 (24%)	482 (76%)	631
FY 2017	184 (29%)	448 (71%)	632
FY 2018	175 (31%)	384 (69%)	559
FY 2019	187 (26%)	531 (74%)	718
FY 2020	164 (26%)	478 (74%)	642
FY 2021	316 (43%)	416 (57%)	732
FY 2022	223 (35%)	423 (65%)	646
<b>Total</b>	<b>1,398 (31%)</b>	<b>3,162 (69%)</b>	<b>4,560</b>

*Source: SDPBC eSupport Change Module*

Instructions for completing a new change request outline how IT staff should fill-in the fields of an eSupport service ticket when a change is ready to be moved to production. Step number 8 of the eSupport service ticket defines: “Urgency: Should be **Scheduled** unless it is a true **Emergency**.”

Our review of sample emergency changes revealed no documentation was maintained indicating (a) the reasons/justifications for the emergency classification, or that (b) the changes were reviewed for proper classification and approval. A high number of emergency software updates could indicate potential misuse of the emergency migration procedures or poor planning for implementation of software updates.

### **Recommendations**

To protect the integrity of the District's computer systems and promote efficiency and effectiveness in managing software maintenance and updates, the ERP Department and IT Division should ensure:

- All software changes are properly classified based on the urgency of the changes. Emergency changes should be adequately documented with proper justification and approval.
- All software changes, especially emergency changes, complete all the required testing and quality review prior to implementation.

***Management's Response:** Emergency changes are necessary. Maintaining the integrity of the District's computer systems is of utmost priority. All software changes (including emergency changes) are tested, reviewed by the QA team, and approved by the Business owner prior to implementation without any exceptions. (See page 17.)*

– End of Report –

**Exhibit A**  
**Glossary of Technical Terms and Acronyms**

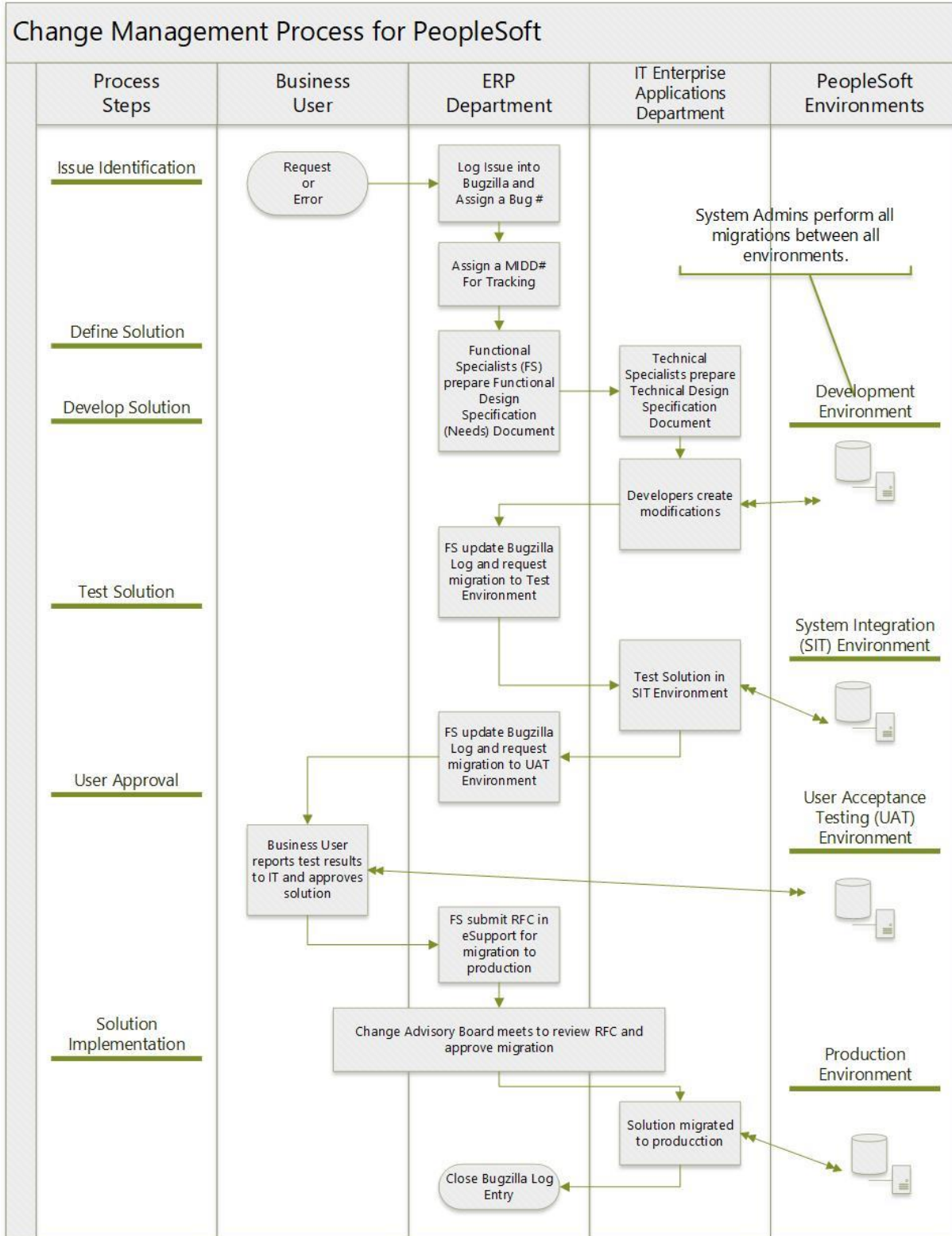
<b>TERM</b>	<b>DEFINITION</b>
Bugzilla	A web-based, general-purpose bug tracking system.
CAB	Change Advisory Board – All groups potentially affected by a change to the IT environment are represented.
DB2	A relational database management system, including database servers, developed by IBM.
ELM	PeopleSoft eLearning Management Subsystem.
ERP	Enterprise Resource Planning.
eSupport	eSupport is the District’s customer service tracking system used to document user IT requests for access, etc.
FDS	Functional Design Specifications.
FIN	PeopleSoft Finance Subsystem.
Google Docs	A web-based system to create and modify documents with other users.
GTAG	Global Technology Audit Guide.
HCM	PeopleSoft Human Resource Management Subsystem.
IIA	Institute of Internal Auditors.
ISACA	Information Systems Audit and Control Association.
IT	Information Technology.
MIDD	Master Identification Document (ERP Department).
NIST	National Institute of Standards and Technology.
Oracle	Oracle Database is a multi-model relational database management system produced and marketed by Oracle Corporation.
PAIR	PeopleSoft Application Issue Resolution – Ranking system to prioritize each issue.
PDM	Production Data Modification.
PeopleSoft	District’s ERP software for all Human Resource Management, Financial Management, and eLearning Management.
QA	Quality Assurance / Test.
RFC	Request for Change.
Sharepoint	A Microsoft product used to store, organize, and share documents.
SIT	System Integration Testing.
TDS	Technical Design Specification Document.
UAT	User Acceptance Testing (PeopleSoft Quality Assurance).

## Exhibit B Quality Assurance Project Requirements Matrix

QUALITY ASSURANCE PROJECT REQUIREMENTS MATRIX																								
Process Name																								
Project Manager (usu. Functional Specialist)																								
MIDD Number																								
Tracking Log Number (usu. Bug Nbr)																								
Project Type (C, S, M,....)																								
										Initials														
C	S	M	L	D	T	DESIGN		Done	QA	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">Project Type Key</th> </tr> </thead> <tbody> <tr> <td>C</td> <td>Critical</td> </tr> <tr> <td>S</td> <td>&lt;3 Months/Reports with Development</td> </tr> <tr> <td>M</td> <td>&lt;4-5 Months</td> </tr> <tr> <td>L</td> <td>6+ Months</td> </tr> <tr> <td>D</td> <td>PDM/Reports no development/Security Migrations</td> </tr> <tr> <td>T</td> <td>Technical</td> </tr> </tbody> </table>	Project Type Key		C	Critical	S	<3 Months/Reports with Development	M	<4-5 Months	L	6+ Months	D	PDM/Reports no development/Security Migrations	T	Technical
Project Type Key																								
C	Critical																							
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M	<4-5 Months																							
L	6+ Months																							
D	PDM/Reports no development/Security Migrations																							
T	Technical																							
✓*	✓	✓	✓				Functional Specification Design																	
	✓+	✓+	✓+				Security Specification																	
	✓	✓	✓				Business Management Approval																	
	✓	✓	✓				ERP Functional Sign-Off																	
			✓				ERP Management Approval																	
										Initials														
C	S	M	L	D	T	DEVELOPMENT		Done	QA	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">REQUIREMENT KEY</th> </tr> </thead> <tbody> <tr> <td>✓</td> <td>Required</td> </tr> <tr> <td>✓*</td> <td>Required within 5 Business days of Migration</td> </tr> <tr> <td>✓+</td> <td>Required if Security is needed</td> </tr> <tr> <td></td> <td>Optional</td> </tr> </tbody> </table>	REQUIREMENT KEY		✓	Required	✓*	Required within 5 Business days of Migration	✓+	Required if Security is needed		Optional				
REQUIREMENT KEY																								
✓	Required																							
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	Optional																							
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	✓+	✓+	✓+		✓+		Security Specification																	
	✓	✓	✓		✓		Unit Test Plan																	
	✓	✓	✓		✓		Development Peer Approval																	
✓	✓	✓	✓		✓		Migration Request to SIT																	
										Initials														
C	S	M	L	D	T	TESTING		Done	QA	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2">ICON KEY</th> </tr> </thead> <tbody> <tr> <td></td> <td>Document</td> </tr> <tr> <td></td> <td>Sign-Off Needed</td> </tr> <tr> <td></td> <td>Addendum</td> </tr> <tr> <td></td> <td>Migration Checkpoint</td> </tr> <tr> <td></td> <td>QA Reviewed</td> </tr> </tbody> </table>	ICON KEY			Document		Sign-Off Needed		Addendum		Migration Checkpoint		QA Reviewed		
ICON KEY																								
	Document																							
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										Initials														
										NUMBERING KEY														
000	QA Project Req Matrix	000-ET3000QA-																						
010	Functional Specification	010-ET3000FS-																						
030	Security Specification	030-ET3000SS-																						
050	Technical Specification	050-ET3000TS-																						
100	Test Plan	100-ET3000TP-																						
110	Test Cases	110-ET3000TC-																						
130	SIT Test Results	130-ET3000TR-																						
150	SIT Sign-Off	150-ET3000SO-																						
130	UAT Test Results	130-ET3000TR-																						
150	UAT Sign-Off	150-ET3000SO-																						
999	Supplemental Documentation	999-ET3000-																						

Source: ERP Department

## Exhibit C Flowchart of Change Management Process for PeopleSoft



Source: OIG review of the District's PeopleSoft Change Management Procedures

Management's Response



THE SCHOOL DISTRICT OF  
PALM BEACH COUNTY, FL

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CHIEF FINANCIAL OFFICER

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**Memorandum**

**TO:** Teresa Michael, Inspector General  
**FROM:** Heather Frederick, CPA, Chief Financial Officer *HF*  
**DATE:** December 6, 2022  
**SUBJECT:** **Response to the Audit of Change Management for PeopleSoft System**

**RECEIVED**

DEC - 6 2022

**INSPECTOR GENERAL**

Management reviewed the Audit of Change Management for PeopleSoft System and has the following responses to recommendations.

1. Procedures adequate, recommend codifying change management procedures in a Change Management Procedures Manual and consider developing a standardized procedure for initiating a software change request.

Management Response:

A standardized procedure for initiating a software change is in place. As recommended the checklist has been included in the procedure manual. The source of the change can be initiated in different ways due to the type change or department requesting the change, however the standard process is followed for all changes.

2. Tracking of PeopleSoft Changes Needs Improvement by a) standardizing procedures for initiating and submitting a change request, b) using a standardized numbering system, and c) interfacing the systems.

Management Response:

A standardized procedure for initiating a software change is in place, see response to recommendation #1. The tracking numbers are manually entered into the systems for cross referencing purposes. Management is currently researching the applications available to eliminate the need for multiple systems.

3. Access to District's computer systems should be provided to users on an as-needed-basis. User IDs for terminated or transferred employees should be timely removed to avoid unauthorized access to the District's computer systems and records.

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The School District of Palm Beach County, Florida  
A Top High-Performing A-Rated School District  
An Equal Opportunity Education Provider and Employer

*MB*



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Management Response:

Effective October 3, 2022, to keep the user list current, the ERP team is reviewing the Bugzilla user accounts bi-weekly, disabling terminated employees' accounts and evaluating whether transferred employees require access in their new position. Management would like to reiterate that terminated employees are not able to access the District Portal and Network as their Active Directory access is revoked upon termination. They are thereby unable to access the Bugzilla system.

4. To ensure proper fiscal accountability and vendors' compliance with the purchase contracts, the billing details for all invoices and the supporting documents should be verified by staff prior to processing for payment.

Management Response:

Management concurs that all invoices and the supporting documents should be verified by staff prior to processing for payment. We will be discussing with the business to improve the Purchase Order receiving procedure and/or system process by December 31, 2022.

5. PeopleSoft Changes Were Adequately Documented

Management Response:

Management concurs that PeopleSoft changes are adequately documented.

6. To protect the integrity of the District's computer systems and promote efficiency and effectiveness in managing software maintenance and updates, the IT Division should ensure:
  - o All software changes are properly classified based on the urgency of the changes. Emergency changes should be adequately documented with proper justification and approval.
  - o All software changes, especially emergency changes, complete all the required testing and quality review prior to implementation.

Management Response:

Emergency changes are necessary. maintaining the integrity of the District's computer systems is of utmost priority. All software changes (including emergency changes) are tested, reviewed by the QA team, and approved by the Business owner prior to implementation without any exceptions.

cc: Deepak Agarwal  
Patrick Tsang

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