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INGLEWOOD BASKETBALL AND ENTERTAINMENT CENTER, CITY OF INGLEWOOD, CALIFORNIA

Paleontological Resources Assessment Report

Prepared for
City of Inglewood
One West Manchester Blvd.
Inglewood, CA 90301

2019

ESA

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City of Inglewood
One West Manchester Blvd.
Inglewood, CA 90301

2019

Prepared by:
ESA

Principal Investigator and Report Author:
Alyssa Bell, Ph.D.

Project Manager:
Sara Dietler, B.A.

Project Location:
Inglewood (CA) USGS 7.5-minute Topographic Quad
Township 3 South, Range 14 West, Section 3 and Unsectioned

Acreage: Approx. 27 acres

Assessor Parcel Numbers: 6129-002-029 and 6129-002-030

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EXECUTIVE SUMMARY

Environmental Science Associates (ESA) conducted a Paleontological Resources Assessment in support of an Environmental Impact Report (EIR) for the Inglewood Basketball and Entertainment Center (IBEC, or Proposed Project), located in the City of Inglewood. The Proposed Project is located on approximately 27 acres along West Century Boulevard, approximately between South Prairie Avenue and Yukon Avenue in the City of Inglewood (Project Site). The City of Inglewood is the lead agency for the EIR pursuant to the California Environmental Quality Act (CEQA).

The Proposed Project would occupy approximately 27 acres of land owned by the City, the Successor Agency, and private parties located in the City of Inglewood, in an area generally bounded by West Century Boulevard on the north, South Prairie Avenue on the west, Yukon Avenue on the east, and West 102nd and West 103rd Streets on the south. Specifically, the Project Site is located in Section 3 and an unsectioned portion of Township 3 South, Range 14 West, of the Inglewood 7.5-minute USGS topographic quadrangle.

The surficial geology of the Project Site consists of Pleistocene-aged older alluvium. A paleontological records search for the Project was conducted by the Natural History Museum of Los Angeles County (LACM) on May 8, 2018. The results indicate that while no fossil localities are known to exist within the Project Site, significant fossil vertebrate remains can be found within older alluvium deposits throughout Los Angeles. The three closest fossil localities in these sediments known to the LACM (LACM 7332, 3264, and 3789) were found approximately 2.0 to 3.8 miles away from the Project Site and produced fossil specimens of a variety of Ice Age animals such as mammoth and horse at depths from 13 to 40 feet below surface. A review of geologic mapping and scientific literature indicates that the older alluvium that characterizes the surficial geology of the Project Site may preserve fossil resources and therefore have high paleontological sensitivity. Accordingly, ESA provides recommendations for paleontological mitigation to reduce potential impacts to a less than significant level. These recommendations are provided in the *Conclusions and Recommendations* section at the close of this Paleontological Resources Assessment Report (Report).

INTRODUCTION AND PROJECT DESCRIPTION

Paleontological Resources Assessment

Introduction

Environmental Science Associates (ESA) conducted a Paleontological Resources Assessment for the Inglewood Basketball and Entertainment Center (Project) in support of an Environmental Impact Report (EIR) prepared pursuant to the California Environmental Quality Act (CEQA). The Proposed Project includes the construction and operation of the Inglewood Basketball and Entertainment Center (IBEC), an approximately 915,000 square foot (sf), 18,000-fixed-seat arena suitable for National Basketball Association (NBA) games and other sporting and entertainment events, public plaza, outdoor stage, community space, practice facility, sports medicine clinic, team offices, retail/restaurants, employee access pavilion, and a parking facilities for team and public parking as well as parking, transportation, and hotel uses.

These activities are referred to collectively as the Proposed Project. The City is the lead agency pursuant to CEQA.

ESA personnel involved in the preparation of this Paleontological Resources Assessment Report (Report) are as follows: Monica Strauss, M.A., project director; Sara Dietler, B.A., cultural resources project manager; Alyssa Bell, Ph.D., report author and Principal Investigator; and Jessie Lee, GIS specialist. Resumes of key personnel are included in **Appendix A**.

Project Location and Description

The Project Site is located in the southwestern portion of the City of Inglewood within Los Angeles County, approximately 10 miles south/southwest of downtown Los Angeles (**Figure 1**). Specifically, the Project Site is located within Section 3 and unsectioned portions of Township 3 South, Range 14 West on the Inglewood, CA 7.5-minute U.S. Geologic Survey (USGS) topographic quadrangle. The 28-acre Project Site consists of four components (the Arena Site, the West Parking and Transportation Hub Site, the East Parking and Hotel Site, and the Well Relocation Site), situated south of West Century Boulevard, near the intersection of South Prairie Avenue (**Figure 2**). The Arena Site is bounded by West Century Boulevard on the north, South Prairie Avenue on the west, South Doty Avenue on the east, and a straight line extending east from West 103rd Street to South Doty Avenue to the south. A portion of 102nd Street would be vacated to allow construction on the Arena Site. The Arena Site would be occupied by a proposed event arena, team offices, a sports medicine clinic, a parking garage, a public plaza, community facilities, and retail and restaurant uses.

The West Parking and Transportation Hub Site is an approximately 5-acre site on the north and south sides of West 101st Street, bounded by West Century Boulevard to the north, hotel and

residential uses to the west, South Prairie Avenue to the east, and West 102nd Street to the south. A portion of West 101st Street would be vacated to allow construction of the parking garage. This

Figure 1 Regional Location

Figure 2 Project Detail

site would accommodate a new parking garage, and would include a pedestrian bridge across South Prairie Avenue connecting the parking garage to retail uses on the Arena Site.

The East Parking and Hotel Site is an approximately 5-acre site bounded by West Century Boulevard to the north, industrial and commercial uses to the east and west, and West 102nd Street to the south. This site would include a surface parking lot for arena attendees and a limited service hotel with associated parking facilities.

The Well Relocation Site is an approximate 0.7-acre site located at 3812 West 102nd Street, surrounded by vacant land to the west and south and bounded by residential uses to the east. This parcel would accommodate a new Water Well #8, including its associated infrastructure.

The Proposed Project would include demolition of approximately 54,098 square feet of existing on-site vacant and commercial uses across multiple parcels for the construction of the Proposed Project.

REGULATORY FRAMEWORK

State and Local Regulations

Paleontological resources are limited, nonrenewable resources of scientific, cultural, and educational value that are afforded protection under state laws and regulations. The following section summarizes the applicable federal and state laws and regulations, as well as professional standards provided by the Society of Vertebrate Paleontology (SVP).

State Regulations

California Environmental Quality Act

The State CEQA Guidelines (Title 14, Chapter 3 of the California Code of Regulations, Section 15000 *et seq.*), are prescribed by the Secretary of Resources to be followed by state and local agencies in California in their implementation of the CEQA. Appendix G of the State CEQA Guidelines includes an Environmental Checklist Form with questions that may be used by public agencies in their assessment of impacts on the environment. The question within Appendix G that relates to paleontological resources states: "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?"

The loss of any identifiable fossil that could yield information important to prehistory, or that embodies the distinctive characteristics of a type of organism, environment, period of time, or geographic region, would be a significant environmental impact. Direct impacts to paleontological resources primarily concern the potential destruction of nonrenewable paleontological resources and the loss of information associated with these resources. This includes the unauthorized collection of fossil remains. If potentially fossiliferous bedrock or surficial sediments are disturbed, the disturbance could result in the destruction of paleontological resources and subsequent loss of information (significant impact). At the project-specific level, direct impacts can be mitigated to a less than significant level through the implementation of paleontological mitigation.

In general, for sites that are underlain by paleontologically sensitive geologic units, the greater the amount of ground disturbance, the higher the potential for significant impacts to paleontological resources. For sites that are directly underlain by geologic units with no paleontological sensitivity, there is no potential for impacts on paleontological resources unless sensitive geologic units which underlie the non-sensitive unit are also affected.

Public Resources Code Section 5097.5 and Section 30244

Other state requirements for paleontological resource management are included in PRC Section 5097.5 and Section 30244. These statutes prohibit the removal of any paleontological site or feature from public lands without permission of the jurisdictional agency, define the removal of paleontological sites or features as a misdemeanor, and require reasonable mitigation of adverse

impacts to paleontological resources from developments on public (State, county, city, district) lands.

Local Regulations

Society for Vertebrate Paleontology

The SVP has established standard guidelines (SVP, 1995, 2010) that outline professional protocols and practices for conducting paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. Most practicing professional vertebrate paleontologists adhere closely to the SVP's assessment, mitigation, and monitoring requirements as specifically provided in its standard guidelines. Most state regulatory agencies with paleontological resource-specific Laws, Ordinances, Regulations, and Standards (LORS) accept and use the professional standards set forth by the SVP. The SVP guidelines are described in the Methodology section of this report.

METHODS AND RESULTS

Archival Research

Methods

The analysis of paleontological resources includes a review of the LACM paleontological records search results and other documentation regarding disturbances to the Project Site and its subsurface geological conditions. The objective of the record search through the LACM was to determine the geological formations underlying the Project Site, whether any paleontological localities have previously been identified within the Project Site or in the same or similar formations near the Project Site, and the potential for excavations associated with the Project to encounter paleontological resources. These methods are consistent with the SVP guidelines for assessing the importance of paleontological resources in areas of potential environmental effect.

As defined by the SVP (1995:26), significant nonrenewable paleontological resources are:

> Fossils and fossiliferous deposits here restricted to vertebrate fossils and their taphonomic and associated environmental indicators. This definition excludes invertebrate or paleobotanical fossils except when present within a given vertebrate assemblage. Certain invertebrate and plant fossils may be defined as significant by a project paleontologist, local paleontologist, specialists, or special interest groups, or by lead agencies or local governments.

As defined by the SVP (1995:26), significant fossiliferous deposits are:

> A rock unit or formation which contains significant nonrenewable paleontologic resources, here defined as comprising one or more identifiable vertebrate fossils, large or small, and any associated invertebrate and plant fossils, traces, and other data that provide taphonomic, taxonomic, phylogenetic, ecologic, and stratigraphic information (ichnites and trace fossils generated by vertebrate animals, e.g., trackways, or nests and middens which provide datable material and climatic information). Paleontologic resources are considered to be older than recorded history and/or older than 5,000 years BP [before present].

Based on the significance definitions of the SVP (1995), all identifiable vertebrate fossils are considered to have significant scientific value. This position is adhered to because vertebrate fossils are relatively uncommon, and only rarely will a fossil locality yield a statistically significant number of specimens of the same genus. Therefore, every vertebrate fossil found has the potential to provide significant new information on the taxon it represents, its paleoenvironment, and/or its distribution. Furthermore, all geologic units in which vertebrate fossils have previously been found are considered to have high sensitivity. Identifiable plant and invertebrate fossils are considered significant if found in association with vertebrate fossils or if defined as significant by project paleontologists, specialists, or local government agencies.

A geologic unit known to contain significant fossils is considered to be "sensitive" to adverse impacts if there is a high probability that earth-moving or ground-disturbing activities in that rock unit will either directly or indirectly disturb or destroy fossil remains. Paleontological sites indicate that the containing sedimentary rock unit or formation is fossiliferous. The limits of the entire rock formation, both areal and stratigraphic, therefore define the scope of the paleontological potential in each case (SVP, 1995).

Fossils are contained within surficial sediments or bedrock, and are therefore not observable or detectable unless exposed by erosion or human activity. In summary, paleontologists cannot know either the quality or quantity of fossils prior to natural erosion or human-caused exposure. As a result, even in the absence of surface fossils, it is necessary to assess the sensitivity of rock units based on their known potential to produce significant fossils elsewhere within the same geologic unit (both within and outside of the study area), a similar geologic unit, or based on whether the unit in question was deposited in a type of environment that is known to be favorable for fossil preservation. Monitoring by experienced paleontologists greatly increases the probability that fossils will be discovered during ground-disturbing activities and that, if these remains are significant, successful mitigation and salvage efforts may be undertaken in order to prevent adverse impacts to these resources.

Paleontological Sensitivity

Paleontological sensitivity is defined as the potential for a geologic unit to produce scientifically significant fossils. This is determined by rock type, past history of the geologic unit in producing significant fossils, and fossil localities recorded from that unit. Paleontological sensitivity is derived from the known fossil data collected from the entire geologic unit, not just from a specific survey. In its "Standard Guidelines for the Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources," the SVP (2010:1-2) defines four categories of paleontological sensitivity (potential) for rock units: high, low, undetermined, and no potential:

- **High Potential.** Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources. Rocks units classified as having high potential for producing paleontological resources include, but are not limited to, sedimentary formations and some volcaniclastic formations (e.g., ashes or tephras), and some low-grade metamorphic rocks which contain significant paleontological resources anywhere within their geographical extent, and sedimentary rock units temporally or lithologically suitable for the preservation of fossils (e.g., middle Holocene and older, fine-grained fluvial sandstones, argillaceous and carbonate-rich paleosols, cross-bedded point bar sandstones, fine-grained marine sandstones, etc.).

- **Low Potential.** Reports in the paleontological literature or field surveys by a qualified professional paleontologist may allow determination that some rock units have low potential for yielding significant fossils. Such rock units will be poorly represented by fossil specimens in institutional collections, or based on general scientific consensus only preserve fossils in rare circumstances and the presence of fossils is the exception not the

rule, e. g. basalt flows or Recent colluvium. Rock units with low potential typically will not require impact mitigation measures to protect fossils.

- **Undetermined Potential.** Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential. Further study is necessary to determine if these rock units have high or low potential to contain significant paleontological resources. A field survey by a qualified professional paleontologist to specifically determine the paleontological resource potential of these rock units is required before a paleontological resource impact mitigation program can be developed. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.

- **No Potential.** Some rock units have no potential to contain significant paleontological resources, for instance high-grade metamorphic rocks (such as gneisses and schists) and plutonic igneous rocks (such as granites and diorites). Rock units with no potential require no protection nor impact mitigation measures relative to paleontological resources.

For geologic units with high potential, full-time monitoring is generally recommended during any project-related ground disturbance. For geologic units with low potential, protection or salvage efforts will not generally be required. For geologic units with undetermined potential, field surveys by a qualified vertebrate paleontologist should be conducted to specifically determine the paleontologic potential of the rock units present within the study area (SVP, 2010:3-4).

Paleontological Resources Significance Criteria

Fossils are considered to be of significant scientific interest if one or more of the following criteria apply:

1. The fossils provide information on the evolutionary relationships and developmental trends among organisms, living or extinct;

2. The fossils provide data useful in determining the age(s) of the rock unit or sedimentary stratum, including data important in determining the depositional history of the region and the timing of geologic events therein;

3. The fossils provide data regarding the development of biological communities or interaction between paleobotanical and paleozoological biotas;

4. The fossils demonstrate unusual or spectacular circumstances in the history of life; or

5. The fossils are in short supply and/or in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and are not found in other geographic locations. [Scott and Springer, 2003]

Significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, uncommon, or diagnostically important. Significant fossils can include remains of large to very small aquatic and terrestrial vertebrates or remains of plants and animals previously not represented in certain portions of the stratigraphy. Assemblages of fossils that might aid stratigraphic correlation, particularly those offering data for the interpretation of tectonic events, geomorphologic evolution, and paleoclimatology are also critically important (Scott and Springer, 2003; Scott et al., 2004).

Although no known resources were identified within the Project Site from the LACM search, this does not preclude the possibility of previously unknown buried paleontological resources within the Project Site that may be impacted during construction. The potential to encounter paleontological resources during construction was determined by reviewing the results of the records search, the depth of native versus fill soils, land use history, past disturbances, and the proposed excavation parameters for the Project.

Geologic Setting

The Project Site is located in the Los Angeles Basin, a structural depression approximately 50 miles long and 20 miles wide in the northernmost Peninsular Ranges Geomorphic Province (Ingersoll and Rumelhart, 1999). The Los Angeles Basin developed as a result of tectonic forces and the San Andreas fault zone, with subsidence occurring 18 – 3 million years ago (Ma) (Critelli et al., 1995). While sediments dating back to the Cretaceous (66 Ma) are preserved in the basin, continuous sedimentation began in the middle Miocene (around 13 Ma) (Yerkes et al., 1965). Since that time, sediments have been eroded into the basin from the surrounding highlands, resulting in thousands of feet of accumulation (Yerkes et al., 1965). Most of these sediments are marine, as they eroded from surrounding marine formations, until sea level dropped in the Pleistocene Era and deposition of the alluvial sediments that compose the uppermost units in the Los Angeles Basin began.

The Los Angeles Basin is subdivided into four structural blocks, with the Project Site occurring in the Southwestern Block, where alluvial sediments can be 5,000 to 14,000 feet below sea level (Yerkes et al., 1965). The Southwestern Block is roughly rectangular, extending from Santa Monica in the northwest, to Long Beach to the southeast (Yerkes et al., 1965).

Geologic Map & Literature Review

Geologic mapping by Dibblee and Minch (2007) indicates that the Project Site is underlain with Pleistocene-aged older alluvium (mapped as Qoa in **Figure 3**). However, as noted above, the geotechnical investigation determined that the older alluvium was encountered at the Project Site at depths of 30 to 40 feet bgs and overlain by younger alluvium (mapped as Qa and dated within Holocene age – up to 11,700 years) (AECOM, 2018). The geotechnical report does not reconcile the discrepancy between the Dibblee mapping which was referenced in the report and their identification of the native materials. Thus, for the purposes of providing a conservative analysis, this paleontological analysis assumes that the native materials encountered across the Project site consist of the Older alluvium. These sediments consist of pebble-gravel, sand, and silt-clay

deposited from erosion of the surrounding highlands that has since been dissected by recent erosion (Dibblee and Minch, 2007). Older alluvium is poorly constrained in age, but is generally considered to have been deposited during the Pleistocene, 11,700 to 2.58 Ma (Dibblee and Minch, 2007).

These sediments are old enough to preserve fossil resources (i.e., over 5,000 years, as per the SVP [2010]), and have a rich fossil history in Los Angeles (Brattstrom and Sturn, 1959; Steadman, 1980) and throughout southern California (Hudson and Brattstrom, 1977; Jefferson, 1991a and b; McDonald and Jefferson, 2008; Miller, 1971; Springer et al., 2009). The most common fossils include the bones of mammoth, bison, horse, lion, cheetah, wolf, camel, antelope, peccary, mastodon, capybara, and giant ground sloth, as well as small animals such as rodents and lizards (Graham and Lundelius, 1994). In addition to illuminating the striking differences between Southern California in the Pleistocene and today, this abundant fossil record has been vital in studies of extinction (Sandom, et al., 2014; Barnosky et al., 2004), ecology (Connin et al., 1998), and climate change (Roy et al., 1996).

Figure 3 Geological Map

LACM Records Search

On April 24, 2018, ESA requested a database search from the LACM for records of fossil localities and paleontological sensitivity in and around the Project Site. The purpose of the museum records search was to: (1) determine whether any previously recorded fossil localities occur in the Project Site, (2) assess the potential for disturbance of these localities during construction, and (3) evaluate the paleontological sensitivity within the Project Site and vicinity. The records search returned no known localities within the Project Site, however a number of vertebrate fossils are known from similar sedimentary deposits in Los Angeles (McLeod, 2018). These are summarized here.

The closest locality known to the LACM from older alluvial sediments is approximately 2.0 miles west of the Project Site on Bellanca Avenue south of 98th Street, where a fossil mammoth was recovered from 40 feet bgs (McLeod, 2018). North of that locality, 2.2 miles northwest of the Project Site near the intersection of Bellanca Avenue and Manchester Avenue, specimens of mammoth (*Mammuthus*), rodent (Rodentia), and a speckled sanddab (*Citharichthys stigmaeus*), were collected from 14 feet below the surface (McLeod, 2018). Near the intersection of Airport Boulevard and Manchester Avenue, fossil specimens of horse (*Equus*), mammoth (*Mammuthus*), bison (*Bison*), and rabbit (*Lepus*) were collected from 13 – 16 feet below surface (McLeod, 2018). Further west, during construction of Tom Bradley International Terminal 3.75 miles from the Project Site, a fossil elephant (Proboscidea) was collected from 25 feet below surface (McLeod, 2018).

The results of the database search are included as **Appendix B**.

Paleontological Sensitivity Analysis

The review of the scientific literature and geologic mapping, as well as the records search from LACM, were used to assign paleontological sensitivities following the guidelines of the SVP (1995, 2010) to the geologic units present at the surface and subsurface of the Project Site that would be subject to ground-disturbing activities:

- **Older Quaternary Alluvium (Qoa) –** Mapped at the surface, but occurring below fill soils 5 to 10 feet bgs., **high sensitivity.** A wide variety of Ice Age fossils are known from these sediments across the Los Angeles Basin, as reviewed above, including multiple specimens belonging to ten taxa known from within 2 - 4 miles of the Project Site (McLeod, 2018).

CONCLUSIONS AND RECOMMENDATIONS

As a result of this study, the geologic units present in the subsurface (5 to 10 feet) of the Project Site identified as older alluvium are assigned high paleontological sensitivity, as they have a proven record of preserving scientifically significant fossils throughout Los Angeles. Excavation within the Arena Site, subsurface parking, and the hotel site, during construction for is planned at depths of up to 35 feet bgs, which would impact older alluvium determined to have a high sensitivity for fossils.

The following recommendations would serve to reduce potentially significant impacts to unique paleontological resources or unique geological features to less than significant levels:

a) *A qualified paleontologist meeting the Society of Vertebrate Paleontology (SVP) Standards (SVP, 2010) shall be retained by the project applicant and approved by the City prior to the approval of grading permits. The qualified paleontologist shall:*

   i. *Prepare, design, and implement a monitoring and mitigation program for the project consistent with Society of Vertebrate Paleontology Guidelines. The Plan shall define pre-construction coordination, construction monitoring for excavations based on the activities and depth of disturbance planned for each portion of the Project Site, data recovery (including halting or diverting construction so that fossil remains can be salvaged in a timely manner), fossil treatment, procurement, and reporting. The Plan shall be prepared and approved by the City prior to the issuance of the first grading permit. If the qualified paleontologist determines that the project grading and excavation activity will not affect Older Quaternary Alluvium, then no further mitigation is required.*

   ii. *Conduct construction worker paleontological resources sensitivity training at the Project kick-off meeting prior to the start of ground disturbing activities (including vegetation removal, pavement removal, etc.) and will present the Plan as outlined in (b). In the event construction crews are phased or rotated, additional training shall be conducted for new construction personnel working on ground-disturbing activities. The training session shall provide instruction on the recognition of the types of paleontological resources that could be encountered within the Project Site and the procedures to be followed if they are found. Documentation shall be retained by the qualified paleontologist demonstrating that the appropriate construction personnel attended the training.*

   iii. *Direct the performance of paleontological resources monitoring by a qualified paleontological monitor (meeting the standards of the SVP, 2010). Paleontological resources monitoring shall be conducted pursuant to the monitoring and mitigation program developed under (i), above. Monitoring activities may be altered or ceased if determined adequate by the qualified*

paleontologist. Monitors shall have the authority to, and shall temporarily halt or divert work away from exposed fossils or potential fossils, and establish a 50-foot radius temporarily halting work around the find. Monitors shall prepare daily logs detailing the types of ground disturbing activities and soils observed, and any discoveries.

iv. *If fossils are encountered, determine their significance, and, if significant, supervise their collection for curation. Any fossils collected during Project-related excavations, and determined to be significant by the qualified paleontologist, shall be prepared to the point of identification and curated into an accredited repository with retrievable storage.*

v. *Prepare a final monitoring and mitigation report for submittal to the City in order to document the results of the paleontological monitoring. If there are significant discoveries, fossil locality information and final disposition shall be included with the final report which will be submitted to the appropriate repository and the City. The final monitoring report shall be submitted to the City within 90 days of completion of excavation and other ground disturbing activities that could affect Older Quaternary Alluvium.*

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APPENDIX A
Personnel Qualifications

APPENDIX B
Record Search Results